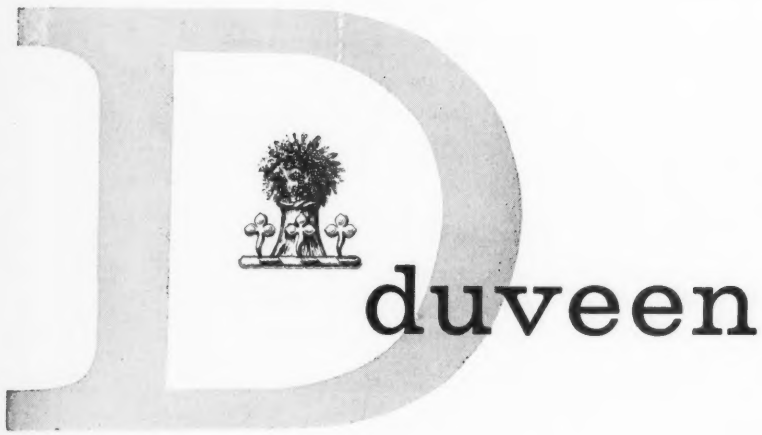

DUVEEN SOAP CORPORATION
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Drug and Cosmetic Industry

Contents **April 1961 Vol. 88 No. 4**

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Drug & Cosmetic Industry is published monthly by Drug Markets, Inc. Frazer V. Sinclair, President and Treasurer; Paul Alexander, Executive Vice-president and Secretary. Editorial and General Office: 101 West 31st St., New York 1, N. Y., U.S.A. Telephone, LOngacre 3-3177. Publication Address: Sun Printing Corp., 28 Renne Ave., Pittsfield, Mass., U. S. A.

Advertising Manager, P. W. Alexander; Advertising Representatives, Walter M. Brauneiss, C. R. Keeley; Production Manager, Katherine Hyde; Circulation Manager, Harry G. Kelbly.

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Subscription price $3.00 a year, in advance. Foreign Countries, $5.00. Single copies, 35c. Back issues 50c. Second-class postage paid at Pittsfield, Mass. Member of Audit Bureau of Circulation.

Copyright 1961
by Drug Markets, Inc., Vol. 88, No. 4.

By the publishers of ***Drug and Cosmetic Industry***

Beauty Fashion. The magazine of personal selling. Yearly subscription in the U.S.A., $3.00.

Drug and Cosmetic Catalog. Directory and data for manufacturers. Published every two years. $4.00 in the U.S.A.

Trade Mark Record and Supplements. Complete trade-mark listing of perfumes and cosmetics. $15.00.

Books. Technical information for manufacturers of drugs and cosmetics.

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"What an odd coincidence: I was made in Paris too."

Keeping Posted

Spot TV Advertising Expenditures

Spot television expenditures by national and regional advertisers for the fourth quarter of 1960, as compiled by the Television Bureau of Advertising, Inc., in cooperation with the N. C. Rorabaugh Co., Inc., totaled $163,060,000 and reflected reporting from 330 stations.

Cosmetics and toiletries accounted for $13,849,000 of these expenditures divided among cosmetics $3,421,000; deodorants $506,000; depilatories $29,000; hair tonics and shampoos $1,453,000; hand and face creams and lotions $1,163,000; home permanents and hair coloring $1,139,000; perfumes and toilet waters $1,215,000; razors and blades $1,525,000; shaving creams and lotions $361,000; toilet soaps $1,977,000; miscellaneous $1,240,000. Expenditures for spot advertising of dental products totaled $3,549,000; made up of dentifrices $2,747,000; mouthwashes $692,000; miscellaneous $110,000. Drug products spot TV ads cost $15,074,000; including cold remedies $5,619,000; headache remedies $3,015,000; indigestion remedies $2,597,000; laxatives $1,074,000; vitamins $1,383,000; weight aids $90,000; miscellaneous drug products $1,017,000, drug stores $279,000.

In the list of the top 100 national and regional spot television advertisers, American Home Products Corp. is 11th with $2,134,100; Avon Products is 33rd with $1,025,600; Bristol-Myers Co. 6th with $2,632,200; Carter Products, Inc., 78th with $427,000; Chesebrough-Ponds, Inc., 91st with $400,400; Colgate-Palmolive Co. 4th with $3,003,600; Max Factor 59th with $564,000; Gillette Co. 25th with $1,184,700; Andrew Jergens Co. 58th with $584,300; Lanvin Parfums, Inc., 69th with $502,000; Lever Brothers Co. 3rd with $3,779,300; Maybelline Co. 44th with $748,700, Miles Laboratories, Inc., 5th with $2,918,700; Nestle Co., Inc., 28th with $1,168,200; Norwich Pharmacal Co. 73rd with $456,200; Pharma-Craft Company 93rd with $396,000; Plough, Inc., 64th with $542,500; Procter & Gamble 1st with $11,990,500; Richardson-Merrell, Inc., 22nd with $1,307,800; Helena Rubinstein, Inc., 53rd with $649,300; Sardeau, Inc., 88th with $406,800; Sterling Drug, Inc., 62nd with $544,600; Wander Co. 40th with $792,500; Warner-Lambert Pharmaceutical Co. 9th with $2,282,200.

TGA to Test Colors

The Color Additives Advisory Committee of the TGA has decided on a final list of colors to be tested. The following are to be subjected to pharmacological tests considered necessary to establish their safety for use in cosmetics applied to the lips: FD&C Blue No. 1; D&C Oranges No. 5, 10, 17; FD&C Red No. 3; D&C Reds No. 7, 9, 10, 19, 21, 27, 36; FD&C Yellow No. 5 .

The following will be tested to establish their safety for use in externally applied cosmetics: FD&C Green No. 3; D&C Greens No. 5 and 6; FD&C Reds No. 2 and 4; D&C Reds No. 18 and 34; D&C Orange No. 4; D&C Black No. 1; D&C Brown No. 1; FD&C Yellow No. 6; D & C Yellows No. 7, 10, 11, FD&C Violet No. 1.

It is possible that other related colors will be covered by tests done on those mentioned above.

Revson about Revlon

Charles Revson, president of Revlon, Inc., addressed the New York Society of Security Analysts and made a number of observations about the company and the industry.

Describing the company's products and customers, he noted, "Today we produce highly scientific, high quality, and highly sophisticated products. It is women who make up our market and when they buy cosmetics, they are not the same as when they buy soap flakes, floor wax, or cereal. Women choose their cosmetics with great care. Colors must be exactly

Your customers of tomorrow

How about cleaning your teeth young lady?
One day Missy will enjoy doing so –
with the dentifrice
whose flavor meets her approval.
Perhaps we can supply you the flavor
of her choice.

Haarmann + Reimer · Holzminden · West Germany
Distributor in the USA · Verona · Newark, N. J.

right for skin tones, lips, and nails. Women get used to these colors and enhance their appearance with them; we make 68 lipstick colors, 57 nail enamel colors, 32 facial make-up colors, 38 eye make-up colors, and 37 hair make-up colors. When we create a product, there must be a genuine need; when we formulate it, it must work; and when we manufacture it, it must be of highest quality and consistently the same.

"The customer for our products range all the way from 13 to 75 and in the last few years her approach to cosmetics has changed completely. Her tastes are more sophisticated, she is hungry for knowledge of make-up and skin care. Her interest in cosmetics starts earlier and continues later than it did. The younger ones want to look and feel older while the older ones want to stay younger and feel younger longer."

Revlon, according to Mr. Revson, fulfills the customer's need through creative marketing and research, by spending $1.5 million a year for research. Laboratories were expanded by 40 per cent in 1959 and another 50 per cent increase is planned for 1961, and current staff numbers 111. Research has produced an improved hair spray resin, and a patent has been applied for. The new color rinse is the first rinse in cream form in a plastic tube and within three months reached second place in the semi-permanent hair coloring market. A new powder and foundation will give a new finish on the face, and preliminary testing of "Eterna 27," the new skin cream, is encouraging and the product may be marketed in the second half of 1961.

Revlon's policy of growth and diversification involves heavy investment in research, development of international business, and acquisitions.

During the last two years, international business has been the fastest growing segment of sales volume and in the next decade may account for 40 to 50 per cent of the total.

In acquiring new operations, Revlon looks for companies in which Revlon product and merchandising know-how can help expansion; cash is used to finance acquisitions; companies should earn 7 to 9 per cent before taxes; the company should have a solid management.

In 1959, Bressard Distributors was bought and gave Revlon a position in the professional hair-color market, and Thayer Laboratories acquired Asthma-Nefrin. Realistic Company, acquired in 1960, rounded out the beauty salon line in professional hair preparations. Revlon for several years sold only toilet waters and colognes, but became distributors for Revillon Freres in 1959, purchased controlling interest in Pierre Balmain perfumes in 1960, and introduced Intimate Perfume in 1960. The purchase of Zunino-Altman Company gave Revlon a position in the plastic flowers market.

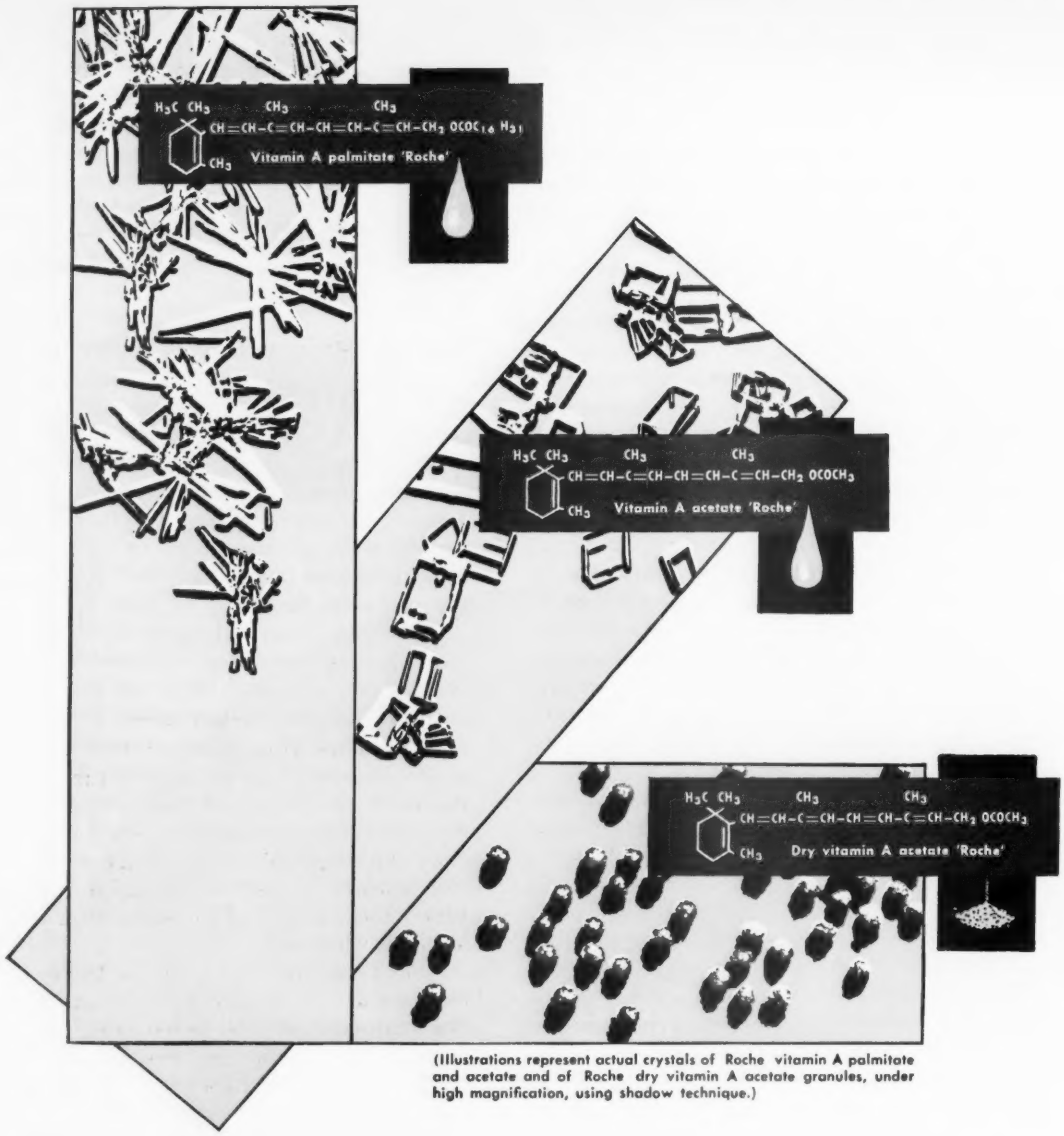
In summary, Revlon considers cosmetics to have moved from the position of luxuries to necessities. More than this, increasing use is expected from the increasing sophistication of consumers and a population pattern that includes 23,000,000 females between the ages of 5 and 19 offers an opportunity. Hair coloring business only started its tremendous increase in the last 3 to 5 years and the surface has only been scratched. Fragrance is in the category of nail enamel 25 years ago and must expand with increasing use patterns now in evidence.

Seventeen Magazine Surveys Beauty Habits

A new survey, "The Beauty Habits and Product Preferences of Young Women under 20" has recently been published by *Seventeen* magazine. It tabulates results obtained from 1,585 members of the publication's consumer panel. Of these panel members, 99 per cent use lipstick, 93 per cent use nail enamel, 82 per cent wear perfume, 73 per cent use mascara, and 71 per cent wear face powder. Half of the panel members paid more than $1.10 for lipsticks, the other half paid less; more than half use medicated and make-up preparations to combat skin blemishes. Bath talc or dusting powder is used by 81 per cent of the panel members, 31 per cent use bubble bath, and 17 per cent own bath salts. Suntan preparations were used by 78 per cent of panel members, 23 per cent use liquid cleanser, 20 per cent use face cream, and 17 per cent use medicated soap. Hand lotion or hand cream was used by 84 per cent of panel members; hair rinses by 56 per cent, hair spray by 60 per cent. Deodorants were used by 74 per cent of panel members, 7 per cent used antiperspirants, and 18 per cent used both.

The Journal of Pharmaceutical Sciences

The American Pharmaceutical Association is to be congratulated on its transformation of the *Scientific Edition, Journal of the American Pharmaceutical Association* into the *Journal of Pharmaceutical Sciences*. We especially like the lead-off review article, which in the March issue was "Kinetics of Drug Absorption, Distribution, Metabolism, and Excretion" by E. Nelson, with a bibliography of 122 items, while other papers maintain previously set high standards. Nevertheless, we do not like the intent of the editorial "A Case of Supply and Demand." Dr. Edward G. Feldman states "It has come to our attention that a sister organization is considering the launching of a new publication in the field of medicinal chemistry. While we recognize the great importance of adequate media for the publication of such research reports, it is our conviction that the establishment of another journal in this field would be most ill-advised at this time . . . We bring this information to the attention of our readers in order that they might express themselves in an informed manner. Such expression should convince prospective publishers that adequate scientific coverage would best be achieved by further improvement in our present journals rather than the issuance of additional publications."



(Illustrations represent actual crystals of Roche vitamin A palmitate and acetate and of Roche dry vitamin A acetate granules, under high magnification, using shadow technique.)

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This problem, if it is a problem, could surely be handled more diplomatically than by exhorting members of the American Pharmaceutical Association to tell members of the Medicinal Chemical Division of the American Chemical Society how to run their business. The editorial almost forecloses private, amicable discussion between the groups.

For all of its general quality and its valuable analytical, pharmaceutical, and pharmacological papers, what can the *Journal of Pharmaceutical Sciences* offer to medicinal organic chemists? In the March 1961 issue, only two of 26 articles, notes, and communications were directly concerned with medicinal chemistry. Submission and acceptance dates show that manuscripts were approved from two weeks to two months after receipt and then had to wait from three to six months for publication; one paper was received on March 16, 1960 and published in March 1961. This schedule does not seem to us to be any better than that of the *Journal of the American Chemical Society*, the *Journal of Organic Chemistry*, or the *Journal of Medicinal and Pharmaceutical Chemistry*. In fact, the weight of evidence seems to favor a new publication, so that research reports can be published before they become hopelessly outdated.

The *Journal of Pharmaceutical Sciences* should concentrate on further improvement to attract readers and contributors rather than trying to restrict their freedom of choice.

Firmenich Shows Film

Firmenich Incorporated had a showing of its new motion picture film depicting research and development operations required in the development of new fragrances and flavors. The film, in brilliant color and with an attractive musical background, sketches steps in determining the composition of natural odors and flavors, complex chemical operation in the synthesis and reconstitution of components, pharmacological testing, and application of Firmenich products. In less than 30 minutes, the film spans the average 5½ years required for the successful completion of a research project and points up the painstaking effort devoted to developing quality products.

Atlas to Make Glycerin

Construction of a new plant to produce 50 million pounds of glycerin and related polyols by a newly developed process has been announced by Atlas Powder Company. The total Atlas investment in the plant will come to about $17 million, ground will be broken in about two months and the plant is scheduled for completion in the second quarter of 1962. Products will be glycerin, ethylene glycol, and other glycols and the Atlas process involves hydrogenation and hydrogenolysis of carbohydrate raw materials. Molasses will be the original starting point, but other carbohydrate sources can be utilized when economics are favorable. Operation of the new plant will integrate with established sorbitol, mannitol and other polyols operations and will be accompanied by an increase in mannitol production.

Baird to Make Sorbitol

Baird Chemical Industries, of New York, has announced its decision to proceed with the construction of a major production facility in the midwest. Sorbitol will be the principal product in the initial stages of the production program; other organic chemicals are under development for subsequent stages.

B-12 Infringement

Merck & Co., Inc., announced that Anheuser-Busch, Inc., has admitted infringing a Merck patent for vitamin B-12 concentrate and has agreed to discontinue manufacture. Anheuser acknowledged the validity of the Merck patent U. S. 2,703,302 in the consent judgment.

Merck has also filed suits in New York, New Jersey, and California to recover damages from other alleged infringers of the company's patents relating to vitamin B-12.

New FDA Sampling Requirement

The Food and Drug Administration has published an order requiring manufacturers to furnish adequate samples of new drugs and their components to permit a try-out of the proposed control test procedure before new drug applications are made effective. This order amends regulations promulgated under the Federal Food, Drug and Cosmetic Act and becomes effective in 60 days.

Samples required under the order are finished dosage forms used in clinical investigations; the new drug components of these dosage forms; finished market packages of the dosage forms prepared for initial marketing and from a commercial scale production batch; and any reference standards or blanks used in assay procedures, except substances recognized in the U.S.P. or N.F.

The final order substantially reduces the number of samples which would have been required by the original proposal. It eliminates the necessity of supplying large bulk packages of medicated feeds, and the need to furnish samples of early experimental batches prepared in the development of the dosage form used in clinical investigations.

New British Drugs

A total of 160 new prescription products were marketed in 1960 in Great Britain by 78 pharmaceutical companies. Of these, 56 were new individual drugs divided among 9 tranquilizers and sedatives, 8 chemotherapeutics, 4 diuretics, 3 antihistamines, 3 anti-Parkinoonism drugs, 3 antitussives, 3 uricosuric agents, a analgesics, 2 for treating angina, and 19 miscellaneous compounds. Twelve products were modifications of known drugs, 16 consisted of new dosage forms of old drugs, and 76 were new formulations, according to the *Index of New Products*.

Counterfeit Drugs

The Senate Anti-trust and Monopoly Subcommittee, headed by Senator Kefauver, expecting to start an investigation of traffic in counterfeit drugs, has postponed hearings to await a report from the FDA. The FDA has been conducting an undercover investigation for the last six months and is ready to initiate criminal charges in a number of cases. According to Commissioner George P. Larrick, few of the drugs in the illicit trade are believed so far to be actually dangerous, but normal inspection and licensing safeguards have been bypassed and this constitutes a serious menace to the public and to the industry.

The main traffic in these drugs has been in the more popular preparations: diuretics, tranquilizers, appetite depressants, and hormones. Wholesalers and jobbers in the racket usually take these tablets in bulk and sell them in smaller quantities to retailers. According to the FDA, box and bottle labels have not so far been extensively counterfeited. According to the FDA, counterfeiting occurs extensively throughout the country, with a heavy concentration along the East Coast; some industry sources estimate that as many as 3 per cent of all prescriptions may be filled with counterfeit products.

Gordon Research Conferences

The Gordon Research Conferences for 1961 have been expanded from 36 to 42 and will be held at the Tilton School in Tilton, New Hampshire in addition to the previous locations at Colby Junior College in New London, New Hampton School in New Hampton, and Kimball Union Academy in Meriden, all in New Hampshire.

Programs of special interest for research people in the drug and cosmetic field are "Medicinal Chemistry," July 31 to August 4; "Food and Nutrition," August 21 to August 25; "Cancer," August 28 to September 1 at Colby; "Proteins," June 26 to June 30; "Steroids and Other Natural Products," July 31 to August 4 at New Hampton; "Lipide Metabolism," June 12 to June 16; "Cell Structure and Metabolism," June 19 to June 23; "Vitamins and Metabolism," July 3 to July 7; "Chemistry, Physiology and Structure of Bones and Teeth," July 10 to July 14; "Toxicology and Safety Evaluations," August 7 to August 11 at Kimball Union; "Microbiological Deterioration," July 17 to July 21 at Tilton.

Requests for attendance at the conferences, or for additional information, should be addressed to Dr. W. George Parks, Director, Department of Chemistry, University of Rhode Island, Kingston, Rhode Island.

TGA Annual Convention

The 26th annual convention of the Toilet Goods Association will be held at the Waldorf-Astoria Hotel in New York City on Tuesday, Wednesday, and Thursday, May 9, 10, 11, 1961. The Toilet Goods Industry Golf Tournament will be held at the Wingfoot Golf Club in Mamaroneck, New York, on Monday May 8.

Business programs will be presented on Tuesday and Wednesday and the scientific program on Thursday. The Association is sponsoring a cocktail party on Tuesday from 4:30 to 6:30 P.M. and on Wednesday evening a dinner dance will be sponsored by The Fragrance Foundation.

The program of the Scientific Section includes the following papers: "Instrumental Evaluation of Commercial Citronellols and Geraniols and Their Esters" by James A. Rogers, Jr., and Zoltan E. Toth; "The Use of Hairless Mice for the Study of Cosmetics" by F. Homburger, A. Tregier, J. R. Baker, and A. B. Russfield; "The Correlation Between Animal Tests and Human Tests in Assessing Product Mildness" by J. D. Justice; "Some Technical Problems in the Color Additives Field" by G. Robert Clark; "The Ionones and Methyl Ionones; a Structure Study via Nuclear Magnetic Resonance" by Ernst T. Theimer and Seymour Lemberg; "In Vitro Studies on Water Diffusion and Uptake of Human Skin" by Peter Flesch; "A Study of Aerosol Shaving Cream Using Statistical Experimental Design" by Phyllis Carter and H. Mack Truax; "Skin Respiration Factor—Evaluation of U.S.P. Ointments" by Henry Goldschmiedt and Irwin I. Lubowe.

Society of Cosmetic Chemists

The Spring meeting of the Society of Cosmetic Chemists will take place at the Hotel Biltmore in New York City on May 12, 1961. The program has been organized by Morris J. Root and will be devoted to the contributions to the cosmetic industry of various chemical specialties: chemical engineer, organic chemist, analytical chemist, pharmaceutical chemist, inorganic chemist, physical chemist, and biological chemist. An additional paper will be presented on the physical and chemical properties of shellac and its derivatives.

Pfizer in Vietnam

A correspondent from Hong Kong, Leonard Chan, general manager of Pfizer Export Corporation there, liked the article by Milton Moskowitz in our January issue, "Drugs—The International Explosion" and recognized one of his associates in the picture used to illustrate the story. Mr. Chan has this correction to make, however: The article mentioned that "Pfizer had its own company, Vinamyd, in charge of its display, while other U. S. companies had to rely on local distributors." As a matter of fact, Vinamyd is 100 per cent Vietnamese owned, was formed to import and distribute Pfizer products in Vietnam, and is thus merely the exclusive Pfizer distributor in Vietnam, not a Pfizer company.

Dixon is FTC Chairman

Paul Rand Dixon, nominated by President Kennedy and confirmed by the Senate, took the oath of office as Chairman of the Federal Trade Commission on March 21. He is former Counsel and Staff Director of the Senate Antitrust and Monopoly Subcommittee (Kefauver) and was trial attorney for the Federal Trade Commission from 1938 to 1957, with time out for war service. The new Chairman has already agreed to cooperate with the Attorney General, Robert F. Kennedy, in an investigation of the manner in which judgments in 56 anti-trust cases have been carried out. A considerable increase in the FTC staff is looked for.

Aspirin Claims Questioned

After examining fastest-relief-of-pain claims made for five competing, heavily advertised analgesic preparations, the Federal Trade Commission diagnosed them as false advertising and issued complaints against the manufacturers. The companies and products are American Home Products Corp., Anacin; Bristol-Myers Co., Bufferin; Plough, Inc., St. Joseph Aspirin; Sterling Drug, Inc., Baeyer Aspirin and Baeyer Aspirin for Children. The complaints allege there is no significant difference in the rate of speed with which these or any other such analgesics relieve pain. Further allegations in the complaint against American Home are that Anacin will neither "relax tension" nor "help overcome depression," as advertised.

William F. Laporte, president of American Home Products said that Anacin advertising had been reviewed by medical and legal advisers and evidence will be presented to the FTC. William M. Bristol 3rd, of Bristol-Myers expects to present evidence to the commission substantiating claims for Bufferin and an attorney for Plough, Inc., asserted that every claim made for St. Joseph Aspirin can be backed up clinically.

Cosmetics of Foreign Origin

The Bureau of Consultation of the Federal Trade Commission has requested the cosmetics and toilet preparations industry to discontinue simultaneously any improper foreign origin representations for domestically-made products. If this is not done voluntarily, the Bureau warned in letters to some 40 manufacturers, FTC mandatory procedures may be invoked.

The request and warning stem from complaints received concerning the manufacturers' promotion of products containing both domestic and imported ingredients, which are mixed or blended in this country. Labels and advertising, according to these complaints, contain words, names, and phrases denoting foreign origin but do not properly disclose domestic processing, as required by trade practice rules for the industry.

The letters stated that the manufacturer should, if the complaints are factual, advise by March 20 whether he wishes to cooperate voluntarily in making the required disclosure on packages and bottles and in advertising. The Bureau will then expect to receive by April 20 specimens of proposed revised package and bottle labeling. Revised labeling should be placed in industry-wide use no later than June 30 and manufacturers should take immediate action to assure clear and conspicuous disclosure in all future advertising.

FTC Actions

A consent order affirmed by the Federal Trade Commission forbids *West-ward, Inc.*, New York City, to claim that it has an adequate control system or to misrepresent the nature or extent of the procedures used in manufacturing, preparing, or distributing drugs or food. The concern, which sells drugs, also must stop using terms such as "quality control," "quality control system," and "control system." These terms, according to the FTC complaint, falsely imply the company has an adequate control system. The order also halts the following representations challenged in the complaint: That a quantitative analysis is made of each preparation to determine the amount of each active ingredient; that West-ward has established the stability as to potency or disintegration characteristics of its enteric coated tablets, unless this is true; that it performs assays in its own laboratories on all preparations sold.

The order was agreed to by the company and the Commission's Bureau of Litigation; the agreement is for settlement purposes only and does not constitute an admission by respondents that they have violated the law.

Two affiliated concerns have been charged by the FTC with misrepresenting colognes as perfumes. They are *Colognes, Inc.*, and *D'Henri, Inc.*, of Rockville, Md., who distribute rebottled colognes, toilet waters, and perfumed sprays to retailers and others for resale to the public.

The complaint alleges that the concerns have rebottled some of their colognes and toilet waters in one dram bottles similar to those traditionally used for perfumes and have sold the products in cartons bearing well-known perfume brand names. The retail price of each bottle was $1.00, but an additional charge is that the concerns have falsely represented on the cartons that the regular retail price of some of the products was $10.00.

According to the complaint, these practices gave retailers the means to deceive the public.

Panat Jewelry Co., Inc., and *Spejac, Inc.*, of New York City, and *G&N Manufacturing Corp.*, of Stamford, Conn., were charged by the FTC with distributing their cologne and toilet water in small "purse size flaconettes" normally used in the sale of perfume and associated in the public mind with perfume. This practice is alleged to give retailers the means to mislead the public.

BEGINS WITH EMERY STEARIC ACIDS

To obtain a light color in any product, it is easier to start with white or colorless basic ingredients. It's costly and often impossible to remove color later. Emery gives you the colorless raw materials you need—Emersol® 132 Lily Stearic Acid and Emersol 120 Stearic Acid.

When you start with colorlessness, you can add as little or as much color as you wish. And the remarkable color stability of Emersol Stearic Acids, as assured by product specifications, minimizes color changes during processing and throughout shelf life. If the Stearic Acid you are now using cannot meet these specifications, why not let us send you samples that can, time after time. It costs you no more for this extra quality.

Write Dept. D4 for samples or 24-page comprehensive booklet, "Emersol Stearic Acids."

a little extra everything except price

COLOR SPECIFICATIONS	Maximum Color		Maximum Color Stability	
	Photo Index	Lovibond 5¼" (Y/R)	Photo Index	Lovibond 5¼" (Y/R)
Emersol 132 Lily Stearic Acid	3/0.3	1/0.3	12.5/2.3	4/1.8
Emersol 120 Stearic Acid	5.5/0.4	1.5/0.4	22/2.6	7/2

Emery

FATTY ACID DIVISION

Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio • Vopcolene Division, Los Angeles, Calif. • Emery Industries (Canada) Ltd., London, Ontario • Export Division, Cincinnati

COMING EVENTS . . . . .

MARCH

15 **American Society of Perfumers,** open meeting, Advertising Club, 35th St. & Park Ave., N. Y. C. (A.S.P., 630 Fifth Ave., N. Y. C. 20)

15-18 **Pharmaceutical Wholesalers Assn.** annual convention, Las Vegas, Nev.

17 **St. John's University College of Pharmacy,** annual pharmacy congress, University Campus, Jamaica, L. I. (Annual Pharmacy Congress, St. John's University, Jamaica 32, N. Y.)

20-31 **Purdue Univ. Industrial Packaging Institute,** industrial packaging short course, Purdue Univ., Lafayette, Ind. (Mark E. Ocker, Memorial Center, P.U., Lafayette, Ind.)

21-30 **American Chemical Society,** spring meeting, St. Louis, Mo. (A. T. Winstead, A.C.S., 1155 Sixteenth St., N.W., Washington 6, D. C.)

31 **Packaging Institute and the National Paper Box Manufacturers Assn.,** symposium on set-up boxes, Sheraton Hotel, Philadelphia, Pa. (Chas. A. Feld, P.I., 342 Madison Ave., N. Y. C. 17)

APRIL

12 **Society of Cosmetic Chemists,** N. Y. Chapter, annual ladies night, N. Y. C. (R. K. Lehne, Colgate-Palmolive Co., 105 Hudson St., Jersey City 2, N. J.)

10-13 **American Management Assn. National Packaging Exposition and Conference,** Lakefront Exposition Hall, Chicago, Ill. (A.M.A. Nat. Pack. Exposition, 1515 Broadway, N. Y. C. 36)

10-14 **Federation of American Societies for Experimental Biology,** 45th annual meeting, Atlantic City, N. J.

11 **Society of Cosmetic Chemists,** Chicago Chapter meeting, (S.C.C., 2 E. 63rd St., N. Y. C. 21).

13 **Pharmaceutical Advertising Club,** meeting, Roosevelt Hotel, N. Y. C. (P.A.C., 489 Fifth Ave., N. Y. C.)

13 **Synthetic Organic Chemical Manufacturers Association,** luncheon meeting, Hotel Roosevelt, N. Y. C. (S.O.C.M.A., 41 E. 42nd St., N. Y. C. 17)

13 **American Society of Perfumers,** annual symposium, 2:00, Essex House, Central Park South, N. Y. C. (See above.)

15 **German Society of Cosmetic Chemists,** lectures, Hamburg: Dr. Thomas, essential oils; Dr. Ludde, dielectric and refractometric evaluations on fatty oils; Dr. Mohrberg, plastics as packaging material for cosmetic products. (N. V.'t Roedthuys, Tesselschadestraat 5, Amsterdam, The Netherlands.)

20-21 **Society of the Plastics Industry,** western section conference, del Coronado Hotel, Coronado, Calif. (S.P.I., 250 Park Ave., N. Y. C. 17)

21 **Parenteral Drug Assn.,** scientific meeting (all-day session) Edgewater Beach Hotel, Chicago, Ill. (P.D.A., 1420 Snyder Ave., Philadelphia 45, Penna.)

23-27 **American Society of Microbiology,** annual meeting, Morrisson Hotel, Chicago, Ill., preceded by a Symposium on Marine Microbiology (April 20-22) co-sponsored by the **Office of Naval Research** and the S.A.B. (J. C. McCaffrey, Ill. Dept. of Public Health, 1800 W. Fillmore St., Chicago 12, Ill.)

23-28 **American Pharmaceutical Assn.** annual meeting, Hotel Sherman, Chicago, Ill. (F. V. Porkorny, A.P.A., 2215 Constitution Ave., N.W., Washington 7, D. C.)

24-26 **Animal Health Institute,** annual meeting, Mayflower Hotel, Washington, D. C.

28-29 **American College of Apothecaries,** annual mid-year conference (in conjunction with the meeting of the American Pharmaceutical Association) Hotel Sherman, Chicago, Ill. (A.C.A., Hamilton Court, 39th and Chestnut, Phila., Pa.)

29 **Toiletry Merchandisers Assn.** (to May 6), Americana, Bal Harbour, Fla.

MAY

1-3 **Pharmaceutical Manufacturing Assn.,** annual meeting, The Greenbrier, White Sulphur Springs, W. Va. (P.M.A., 1411 K St. N.W, Wash. 5, D. C.)

1-3 **American Oil Chemists' Society,** annual meeting, Sheraton-Jefferson Hotel, St. Louis, Mo.

2-9 **International Packaging Exhibition,** Amsterdam, Holland (Verpakkingsbeurn, Tesselschadestraat 5, Amsterdam, Holland)

4-7 **National Industrial Pharmaceutical Research** annual conference, King's Gateway, Land O'Lakes, Wis.

9-11 **Toilet Goods Assn.,** convention, and Scientific Section meeting (May 11), Waldorf-Astoria Hotel, N. Y. C. (Kathryn Fitzpatrick, T.G.A., 1270 Avenue of the Americas, N. Y. C. 20)

11 **Pharmaceutical Conference,** tenth annual, Rutgers Univ. College of Pharmacy, Newark, N. J.

11 **Pharmaceutical Advertising Club,** meeting, Roosevelt Hotel, N. Y. C. (See above.)

11-13 **German Society of Cosmetic Chemists** together with the **Society of Aesthetic Medicine,** congress at Konstanz

12 **Society of Cosmetic Chemists,** semi-annual meeting, Biltmore Hotel, N. Y. C. (S.C.C., 2 East 63 St., N. Y. C. 21)

14-16 **Creative Packaging of Consumer Goods** seminar, sponsored by Engineering Extension, University of California, Lake Arrowhead, Calif. (Dept. K, Univ. Extension, U. of C., Los Angeles 24, Calif.)

14-17 **Flavoring Extract Manufacturers Assn.** annual meeting, Savoy-Hilton Hotel, N. Y. C. (John S. Hall, Hickery & Hall, 1051 First National Bank Bldg., Chicago 3, Ill.)

14-17 **The Proprietary Assn.,** annual meeting, The Greenbrier, White Sulphur Springs, West Virginia (P.A., 810 Eighteenth St., N. W., Washington 6, D. C.)

15 **Packaging Industry Technical Conference** of the American Institute of Electrical Engineers, New Ocean House, Swampscott, Mass.

15-17 **Chemical Specialties Manufacturers Assn.,** annual meeting, Hotel Drake, Chicago. (C.S.M.A., 50 E. 41st St., N. Y. C. 17)

17 **American Society of Perfumers,** closed meeting, Advertising Club, 35th St. & Park Ave., N. Y. C. (A.S.P., 630 Fifth Ave., N. Y. C. 20)

22-24 **Synthetic Organic Chemical Manufacturers Association,** Spring outing, Skytop Lodge, Skytop, Pa.

22-25 **American Society of Design Engineers,** Design Engineering Show, Cobo Hall, Detroit, Mich. (Clapp & Poliak, Inc., 341 Madison Ave., N. Y. C. 17)

22-26 **American Society of Tool and Manufacturing Engineers,** Engineering Conference and Tool Show, New York City Coliseum.

24 **Packaging Institute,** joint meetings with Institute of Food Technologists, Hotel Syracuse, Syracuse, N. Y.

JUNE

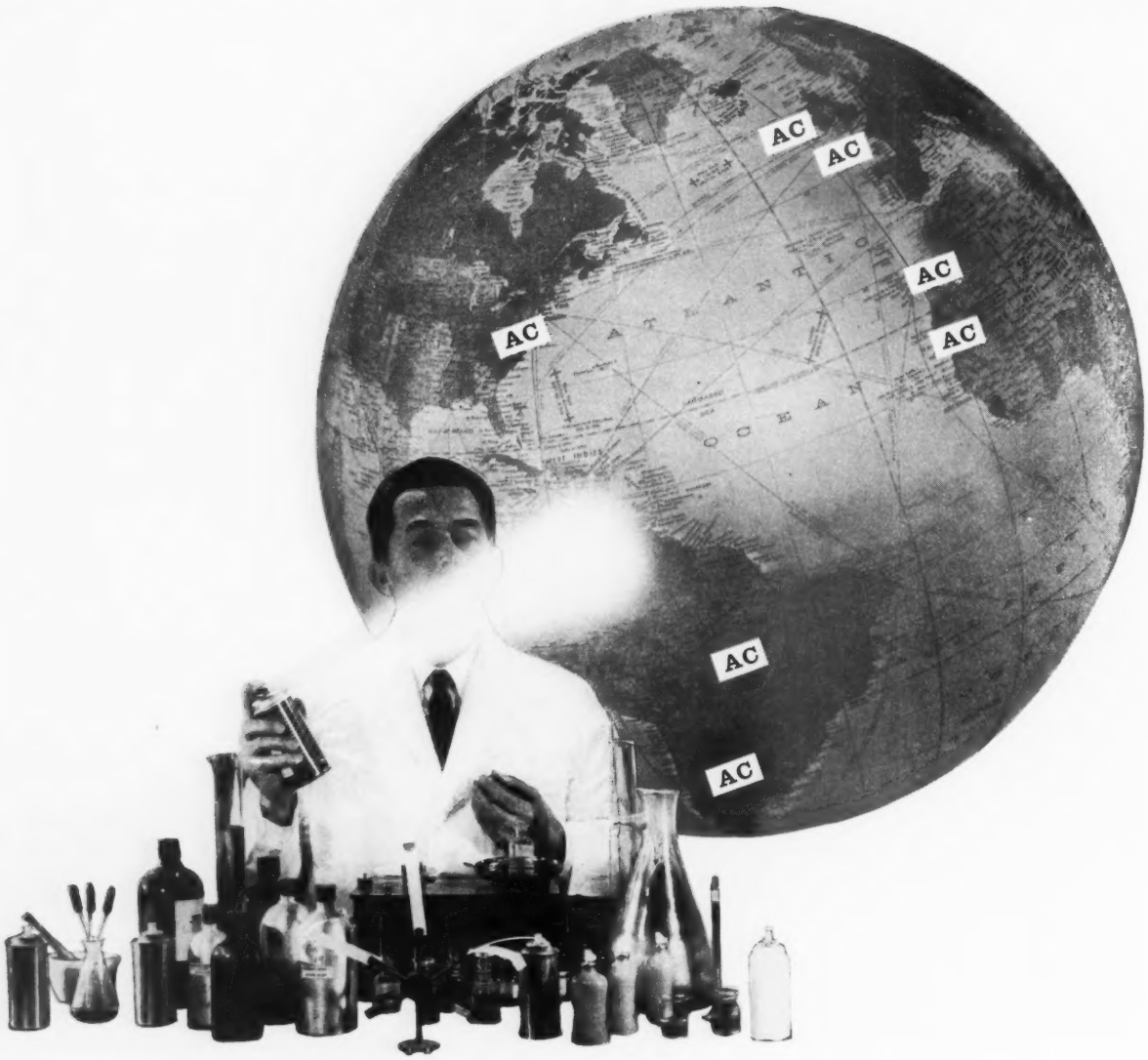
4-7 **Annual National Industrial Pharmaceutical Research Conference,** King's Gateway, Land O' Lakes, Wisconsin, Extension Services in Pharmacy, University of Wisconsin (Richard S. Strommen, E.S.P., 301 Chemistry Bldg., University of Wisconsin, Madison, Wisc.)

5-9 **Society of Plastics Industry,** National Plastics Exposition and annual national conference, Coliseum and Hotel Commodore, N. Y. C. (S.P.I., 250 Park Ave., N. Y. C. 17)

6-8 **Instrument Society of America,** conference and exhibit, Toronto, Canada.

8-10 **Manufacturing Chemists' Assn.,** annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

(Continued on page 543)



Since 1768 the House of Chiris has dedicated itself to the Fifth Sense (Olfactive). In the development of Essential Oils, Floral Absolutes, Chemical Isolates, Synthetic Chemicals, and all those creations and specialties which combine industrial aromatics with natural products and produce fragrance, the House of Chiris has a cherished history. Today Chiris maintains laboratories headed by experienced chemists who have available to them not only the accumulated knowledge of generations of Chiris perfumers and chemists, but also the research facilities of six modern laboratories located in **Grasse and Paris, London, Sao Paulo (Brazil), Buenos Aires (Argentina), and New York City.** Whether Essential Oils, Isolates, or combinations thereof, are used as fragrance constituents by the perfumery, soap, cosmetics or allied industries, we are happy to be consulted.

ANTOINE CHIRIS CO., INC. 220 East 23 Street, New York 10, N. Y.

MANUFACTURING LABORATORIES
GRASSE • PARIS • LONDON • SAO PAULO • BUENOS AIRES
REPRESENTATIVES WORLD-WIDE

PERFUMES AND COSMETICS
Today's Potentials

Continuing our statistical study of the cosmetic industry, we estimate potential markets in various cosmetic fields, pointing out opportunities for major expansion. The following is Part I. Part II will appear in our May issue.

In the last decade the cosmetic industry, as indeed the entire economy, has experienced a boom. We present here an analysis of the factors that have influenced the growth of the important cosmetic product groups, and an estimate of the future sales potential of these cosmetics.

The record is not uniform for the sales growth of all products. Some, such as fragrance, deodorants, certain hair products, and some eye makeup products, have had growth substantially exceeding that of the entire industry. Others, as this article shows, have lagged or have grown at a lesser pace.

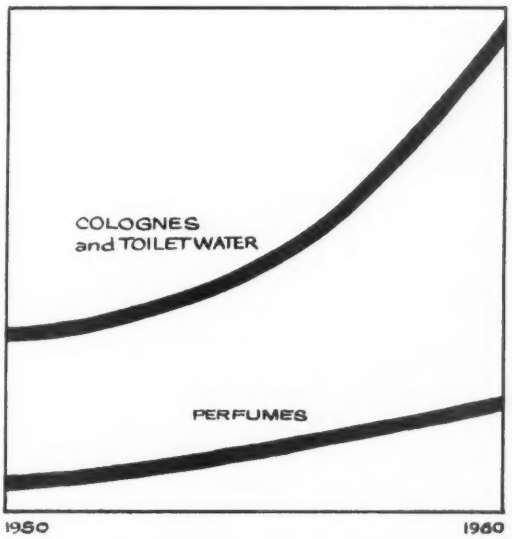
Among factors that have favored the growth of the industry are the growth of population, increased income, the enormous growth in the number of women employed, more and more time for leisure and social activities, and the development of such markets as those of the teen-agers and the older women.

At present, about 50 million women spend approximately $13,000,000,000 yearly for fragrance, hair preparations, and cosmetics. This averages about 50 cents a week per person. Some go as high as $200 a year for their home beauty bill; many, therefore, fall well below the average.

The industry will continue to grow, and, as in the past, growth will depend on new products, changing social habits, new markets, and a variety of constantly changing patterns within the industry. In making this analysis we have been fortunate in having access to confidential surveys by a number of leading cosmetic firms; it is based also on all statistics available for the industry, interviews with knowledgeable leaders of the industry, and the best opinion of members of this staff.

Fragrance

Let us first consider fragrance, one of the products of our industry that has enjoyed long and general acceptance by consumers. The market for these has shown consistent growth for the past 20 years and an accelerated growth for the past five. Nevertheless, surveys indicate that only 53 per cent of American women use perfume, and only 64 per cent use the more popular cologne and toilet water.



What has been happening? Historically, fragrance identification has struggled against two major handicaps, the conceptions of sex and of luxury. Contrary to the conclusion one might draw from a superficial examination of our social scene, a sex-linked product is at a disadvantage in a nation with a firm underlying stratum of Puritan morality. The result of this is the limitation of the use of fragrance to certain age groups as well as social groups; although this has varied in different eras, its effect has been severe. Among users there is little variation in percentage of those using cologne and toilet water from the age of 15 to 55. Among users of perfume, however, there

is a drop from a high of 65 per cent for younger women to 47 per cent for the older group.

The second handicap, perhaps even more important, and perhaps also partially stemming from our basic Puritanism, has been the fixed and often justified opinion of Americans that perfume is not only a luxury, but an expensive one. To date, advertising and educational efforts have been unable sufficiently to break down this barrier. The result has been the traditional restriction of perfume to the category of luxury gift items, suitable for Christmas and other very special occasions.

Our fragrance market is basically one for cologne and toilet water. The outstanding increase in fragrance sales has resulted from (1) providing a product the consumer can buy for herself (the tiny one-half ounce bottle of perfume for from 10 to 20 dollars or the seemingly more expensive one-ounce size are both regarded as hopelessly extravagant) and (2) developing methods for more convenient use or dispensing.

Sales volume soared in the early Nineteen Thirties with the introduction of the so-called cologne, which was a diluted perfume or a match of an original perfume with a much lower concentration of costly essential oils. Its tremendous importance in increasing industry sales lay in offering to women a fragrance with a famous name at a price they could afford. The unit price for the product at that time was usually a dollar, and with this impetus the amount of fragrance sold during these depression years of the Thirties reached new heights.

Other developments reflected in increasing sales were the solid cologne stick, with a run of a few years, the two-ounce cologne bottle, and the packaging of sets of miniatures. But it was the introduction of the aerosol package after World War II that brought the truly dramatic change in the consumer's attitude toward the purchase of fragrance. The aerosol, with its push-button operation, metered spray, and purse-size dispenser, provides a convenience of use that is particularly appealing to Americans and encourages frequent usage.

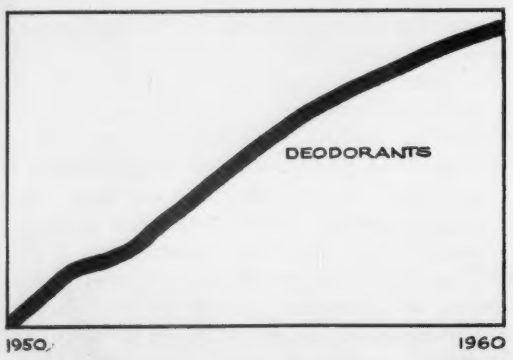
Since its introduction, the aerosol dispenser probably has added as much as $25 million to fragrance sales. The industry has an obligation to educate and promote the use of fragrance to the 40 to 50 per cent of women who make no use of it, and its use to all women as a necessity in daily grooming.

Before leaving the subject of fragrance, we might well consider such aids to grooming as bath products and deodorants. For a great many years bath products have had a small but very comfortable share of the cosmetic market. Some years ago bath salts and crystals were highly favored; today we have a host of products, and the increase in sales is steadily gaining momentum. With the introduction of perfumed bath oils there was a sharp upturn in the market, and new products are gradually being added to bath lines. However, figures show that only 17 per cent of women are users of bath oils, so the potential for growth is great. Among women of 55 years or more, with presumably more time and money to devote to themselves, the percentage of use is only 10 per cent.

Closely associated with bath products are deodorants, used by approximately 88 per cent of the women in the United States, but by only 60 per cent of the men. Certainly, more men can be persuaded to use deodorants and antiperspirants that have been specifically designed to appeal to them. The apparent saturation of the feminine market refers to the proportion of women who use the product, but says nothing about the frequency of use. In this direction, there should be ample opportunity for increased sales.

Men's Toiletries

The history of men's toiletries—more exactly, men's fragrances—in America is one of ups and downs. Utility products such as shaving materials, of course, have always had general acceptance. The



market for these has been improved by the introduction of new forms and methods of dispensing. The potential for increase here is dependent on the growth of population and the degree of prosperity of the nation, modified by expansion of electric shavers.

Fragrance products, on the other hand, although manufactured domestically since colonial times to meet a genuine demand, have experienced violent variations in extent of use and degree of public acceptance.

Prominent in the typical line today is the wide-selling basic product, after-shave, with cologne, men's deodorants and talcum following, not necessarily in that order. During World War II, men's toiletries held great favor, particularly as gift lines sold in department stores. Although there were at one time 160 such lines in existence, in the postwar period most went out of business.

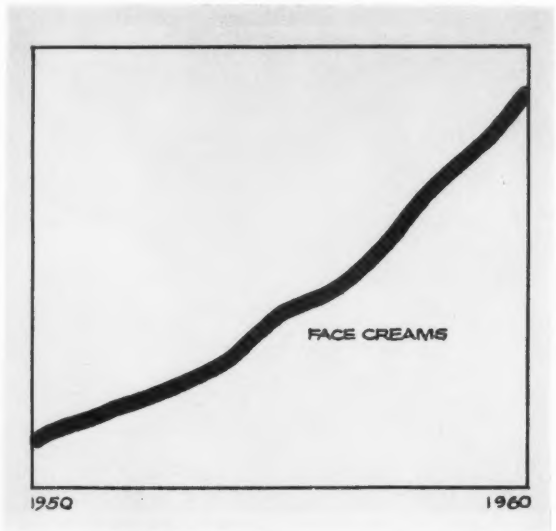
A market upturn began around 1955, and this segment of the industry has since seen accelerating growth. It is probable that today more than 25 mil-

lion men use an after-shave and most use it daily. With the lowest priced mass distributed articles and gift lines in department and better drug stores, this segment of the industry has a potential for dynamic growth. Even greater growth is to be expected in the gift lines.

Skin Care

Industry products for the care of the skin can be divided into two general categories, cleansing and treatment products.

Only 52 per cent of women use cleansing creams, only 16 per cent use night creams, 18 per cent use cleansing lotions, 12 per cent, lubricating creams, and 22 per cent, medicated items. Among those using these products usage varies from age 15 to 55 in this way: cleansing, 40-55 per cent; night creams 10-20 per cent; lubricating creams, 4-15 per cent; and medicated, 39-9 per cent. We may well question the failure of the hundreds of millions of advertising dollars and the efforts of more than 10,000 trained sales girls in direct contact with consumers to educate women to the proper and frequent use of these products.

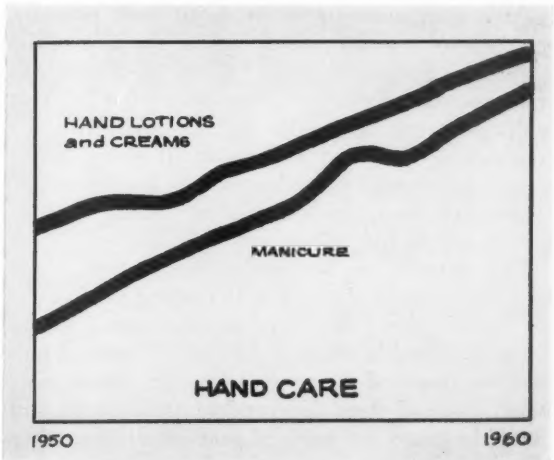


Women today know more than ever before about skin types (dry, oil, combination), causes of special problems (blemishes, enlarged pores, flakiness), and the proper measures to be taken in each instance. Nevertheless, the lack of effective education seems to be one of the primary hindrances to the growth of this market toward its great potential.

The market has been stimulated recently by the introduction of liquid and foam (in both tube and aerosol) cleansers. Used with water, these types have captured a new customer, the woman who previously used only soap and water. These products have not cut into the established market for creams but, on the contrary, have encouraged the entire market.

The greatest immediate potential may lie in the newer types. But there is a largely undeveloped market for the range of skin care products in both the treatment and cleansing categories, and the ways to develop it are clearly indicated. One example in conclusion. Most women have waited (and still do) until the age of 40 or so, when the damage has been done, to begin proper care and treatment of the skin. A proper job of education to the fact that actually every woman over the age of 28 should have a regular regimen of skin care and should begin the use of some products even earlier is an obvious way to start these products on the road toward the wide acceptance they should command.

We will conclude Part I of this discussion with a word about care of the hands. In spite of some product developments, such as the addition of silicones, and an apparent shift from the cream to the lotion type, this market, with 69 per cent usage, has shown only a modest growth in the past few years. Women have discovered the value of hand lotions and creams for use on other areas of the body, and perhaps this has meant a slight increase in sales. Out of basic research in medical and cosmetic laboratories should come a knowledge of the structure and function of the skin which could point the way for development of new or improved products.



As for nail enamel, the stabilization of this market so far below its potential must also be laid on industry's doorstep. From the time when the introduction and enthusiastic acceptance of color gave the market a tremendous surge forward, most producers have tended to take their money out of nail enamel promotion. At least some market growth should be expected from product development. Another means to the end could be a more intense promotion of the high fashion tie-in of nail color with costumes and with lipstick.

Part II of this article, which will appear in the May issue of Drug and Cosmetic Industry, will conclude this over-all picture of the sales potential for cosmetics in the coming years. •

Current pharmaceutical advertising puzzles: *Is overexposure lessening impact? Which medium is best, and how much must a company spend? Are there new, untapped media? The answers have yet to be found.*

CALLING ALL DOCTORS

BY MILTON MOSKOWITZ

It has been estimated that producers of ethical drugs now spend about $200,000,000 a year on advertising. Since there are some 200,000 physicians in the United States, this means that each doctor is subjected to $1,000 of advertising pressure a year—not counting the blandishments of the detail men. Actually, the pressure is much greater because the bulk of this advertising is directed at the 140,000 physicians who write the vast majority of prescriptions. But let's stay with the larger figure—the 200,000 total. This is a tremendous weight of advertising. If every family unit in the country was subjected to a similar amount of pressure, the nation's annual advertising expenditure would be $45 billion, not $11.5 billion!

This pressure can be stated in many terms. It can be stated in terms of the 10 to 15 mailing pieces a doctor receives every day from pharmaceutical houses. It can be stated in terms of the stack of medical publications that find their way to doctors' offices every week, some of them independent publications supported by pages and pages of paid advertising, others sponsored by drug companies. It can be stated in terms of the exhibits mounted by drug companies at medical meetings. It can be stated in terms of free samples.

Obviously, that old cliche, "Build a better mousetrap and the world will beat a path to your door," is not an operating principle in this industry. On the contrary, in this industry the more exciting your new discovery is, the more you have to be prepared to spend to tell the medical profession about it. The industry has recently come in for some searching criticisms for its armada of promotion. The Kefauver investigating committee showed intense interest in—and some scorn for—ethical drug advertising. John Lear, science editor of *The Saturday Review*, has penned some withering blasts. Two years ago Harper & Bros. published a book by Tom Mahoney called "The Merchants of Life." Last year Thomas Y. Crowell published a book by Ralph Lee Smith called "The Health Hucksters." These titles tell much about the change in the climate since 1959.

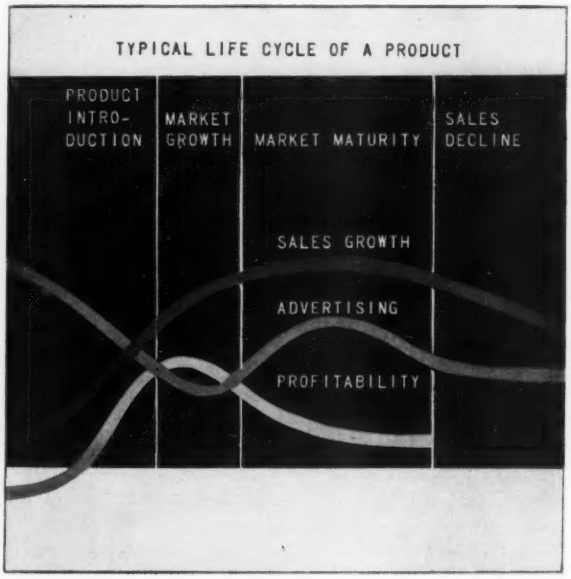
Within the industry itself advertising is recognized as a problem area. No one yet has devised a reliable formula to show that X amount of advertising dollars will produce Y amount of sales. The one who does will make a small fortune for himself. Ethical drug houses are intensely aware of what is called the "communications logjam": an island of doctors surrounded by a horde of media. What is the most efficacious marketing mix? Should the budget be split 25 per cent journal advertising, 75 per cent direct mail? Or the other way around? Or 50-50? The answers vary almost by the number of advertisers. Eli Lilly and Smith, Kline & French favor direct mail. Wallace Laboratories and Merck favor journals. Lederle uses the 50-50 formula.

Reaching The Doctor—Illustration by L. W. Frohlich & Co., of the statistics gathered by R. Ferber and H. W. Wales in their University of Illinois study, "The Effectiveness of Pharmaceutical Promotion."

The problem of how to reach the physician with a message is a symptom of the growth of the industry. Fifteen years ago it wasn't much of a problem. Products had a long life ahead of them and simple reminder advertising was sufficient. With the advent of the "wonder drug" era and the rapid obsolescence of products, it became necessary to put massive amounts

of advertising behind new drugs so that the manufacturer could realize his profit before his product became a has-been. The result was an explosion in advertising activity. Advertising agencies specializing in ethical drugs mushroomed and spawned offshoots. New medical publications popped up like daisies in the spring. Entirely new media were created to reach physicians.

The tremendous increase in the volume of advertising since 1950 was detailed recently by Cortez F. Enloe Inc., an ethical drug ad agency. "The average doctor today," the agency pointed out, "is exposed to more than four times the number of medical journal advertisements he was exposed to 10 years ago. He receives more than twice as many direct mail pieces



Advertising-Sales-Profits—Advertising reaches its peak during product introduction, as shown by this chart by L. W. Frohlich & Company, advertising agency, based on studies done by Dr. J. W. Forrester.

as in 1950. This means that the exposure chance of a journal advertisement has decreased to less than one-fourth, and that of a direct mail piece to less than half of its 1950 counterpart."

Costs also have risen sharply. The Enloe agency reported that since 1950 journal space costs have increased 60 per cent, production and addressing costs 33 per cent and bulk postage rates 150 per cent. Result: The 1950 advertising dollar is today worth 62 cents.

The industry leaders, those with sales in excess of $100,000,000, must today spend a minimum of $5,000,000 a year on advertising. Indeed, Lederle Laboratories, whose sales are an estimated $160,000,000, told the Kefauver committee that it is spending $8,464,000 annually on advertising.

An advertising manager who fell asleep in 1950 and woke up today wouldn't recognize the media field. Here is an accounting of some of the changes:

- In 1952, Chas. Pfizer made medical advertising history by taking a 12-page magazine, *Spectrum*, and running it as an advertising insert in the *Journal of the American Medical Association*. Produced by Pfizer's agency, William Douglas McAdams Inc., *Spectrum* ran in *JAMA* for four years. It was the largest single contract in medical advertising history. *Spectrum* is now being mailed directly to doctors by Pfizer.
- In 1955, Ciba Pharmaceutical Products struck a new vein by launching *Medical News*, a newspaper mailed to doctors twice a month. It was produced by the ethical drug agency, Sudler & Hennessey.
- Four months later — in January, 1956 — McAdams launched *Scope* for Upjohn Co. This was a 16-page newspaper mailed to doctors every week.
- In 1957, Dr. Delix Marti-Ibanez put out the first issue of *MD*, a slick Time-like monthly designed to entertain the doctor. It was an instantaneous success and now regularly carries more than 100 advertising pages an issue.
- In 1958, Warner-Chilcott Laboratories introduced a new monthly for doctors, *World-Wide Abstracts of General Medicine*.
- *Medical Times* increased its page size and revised its format.
- Hearst introduced *New Medical Products* in January, 1959.
- *Medical Economics* moved up from a monthly to a semi-monthly.
- *Annals of Allergy* moved from a bi-monthly to a monthly.
- *Western Medicine*, a new medical publication

(*Continued on page 470*)

SELLING COST AS A PERCENT OF SALES

Annual Sales	Advertising	Detailing	Total Selling Expense
Under $10 million			
Firm A	11.0%	26.0%	37.0%
Firm B	14.0	20.0	34.0
$10-40 million			
Firm C	10.0	19.0	29.0
Firm D	13.0	17.0	30.0
Firm E	17.5	9.1	26.6
$40-100 million			
Firm F	10.0	20.0	30.0
Firm G	10.0	10.0	20.0
Over $100 million			
Firm H *	6.8	...	...
Firm I *	2.9	8.4	...
Firm J	5.0	5.0**	...
Firm K	8.5	13.6	22.1

How Much for Advertising—Donald F. Fitzsimmons, head of the New York advertising agency bearing his name, once polled 11 pharmaceutical companies to find out how much each spent on selling costs. The result is the above table, showing a wide variation, with the larger producers requiring a far smaller percentage of sales for advertising than the smaller companies.

Scientific Administering of Research

BY FRED C. THIELE
RESEARCH ADMINISTRATOR, SHULTON, INC.

The administration of scientific research should free scientists to do their research. Mr. Thiele tells us what specific abilities such an administrator must have, and how he can best do this.

The growth in size and complexity of modern research organizations has led to the development of a new science, that of research administration.

This is not to say that administration as a science has developed recently. More than 75 years ago Captain Henry Metcalfe[1] carefully formulated certain principles for the operation of good administrative practices. These principles depended on uniform attention to their progress for success, rather than on occasional violent efforts to adjust them to the current state of affairs. "If there be a science correlative to the art of administration," wrote Captain Metcalfe, "it must, like every other physical science, be founded on the comparison of accumulative observations." The common assumption that the administration of the research organization is very different from administering other organizations may be ascribed to the personality and peculiar character of the scientist, who is supposed to be temperamental and often to have an inherent dislike for administrators.[2] Furthermore, there is little agreement on the extent to which there is a carry over from general administrative theory and practice to the administration of research.

The function of research administration exists in practically every research organization. In some groups this role is not clearly recognizable, since the administrative duties may be performed by the research or scientific director. Even so, the administration of research should not be confused with the direction of research. The functions of research administrator and research director complement each other, and, if the lines of organization are clearly drawn, there should be no overlapping. According to Webster, administration is the performance of the executive duties of the operation or business, while a director points out the right way and gives guidance to certain activities. The key distinction is between responsibility for the direction of the scientific program per se and responsibilities that focus on nonscientific aspects. The purpose of this latter function is to relieve the research director of most nontechnical and semi-technical work, so he will have enough time to do all the things he should be doing. The research director is freed to provide direction and control of various projects; to guide, counsel and develop scientists; to conduct long-range planning and make major scientific decisions after adequate study.

With the relatively recent recognition of the administrative role in research, the administrator is sometimes seen as "the man in the middle." In his attempt to maintain controls, many of which may be required by top management, he may be the focal point for grumbling about red tape and unnecessary interference with research.[2] The administrator in this position must act both as a buffer between the scientists and the organization, and as an expediter to facilitate the progress of the research.

The most restricted definition of the research administrator is that of a business manager responsible only for items such as purchasing, payroll, personnel matters, and maintenance of building equipment and service operations. A much wider definition, the one found in most research organizations, is the treatment of the job as a residual category that also includes total responsibility for the allocation of funds, laboratory space, and all relations of nonscientific nature with the scientific staff. The range of duties is very wide, not only within a given organization but also between organizations.

Should the research administrator also be a scientist? In almost all nonscientific organizations, the administrator is as well qualified—or is supposed to be—as the people he administers. In many research organizations, however, the scientist at the bench knows more about his job than does the administrator. Some contend that it may be wasteful to have a scientist in a full-time administrative position. Scientists in general, however, argue that the administrator must know what he is administering, that administration involves logic, common sense and desire to do things systematically—which a scientist does by defi-

(Continued on page 487)

Harvesting Roses in Morocco . . . . ►
Since World War II, the production of rose oil in Morocco has increased greatly. The flowers are picked at dawn during March and April and taken directly to the nearest plant, where the oil is extracted with petroleum ether, on arrival. Moroccan Rose has the warmth of Rose Otto, the Bulgarian variety, but it is less spicy.

BY LLOYD I. OSIPOW FOSTER D. SNELL, INC.

A BUFFERING HUMECTANT FOR COSMETICS

How to use this humectant in a variety of cosmetic formulations.

Sodium lactate, in combination with lactic acid, functions both as a buffer and as a highly effective humectant. Although there is a definite tendency on the part of cosmetic chemists to formulate creams and lotions with a slightly acid *p*H approximating that of the skin, the merits of the sodium lactate—lactic acid system have largely been over-looked.

Lactic acid, itself, is widely used as an acidulent in foods and beverages. It has a mildly acid taste in contrast to the sharp acid taste of other food acids. It has been reported to be a bactericide and to prevent deterioration in certain foods.[1] The calcium salt is water-soluble and is used in medicine as a source of calcium.

Sodium lactate is a hygroscopic compound that crystallizes only with great difficulty. It is available commercially as a viscous, aqueous solution containing 70 to 80 per cent sodium lactate. The physical properties of the commercial 75 per cent by weight aqueous solution are shown in TABLE 1.

TABLE 1
Physical Properties of 75% by Weight Sodium Lactate[2]

Density (d_4^{25})	1.4075
Viscosity (poise at 25°)	— 20
Freezing point	below 10° C
*p*H on dilution of 10% sodium lactate	7.0
Refractive index (n_D^{25})	1.4418
Equilibrium Relative Humidity (%)	32

The humectant properties of sodium lactate are such that, over a broad concentration range, the relative humidity above aqueous solutions of sodium lactate is less than above aqueous solutions of glycerin.[2]

Lactates occur naturally in the body. Formulations containing sodium lactate may be used without any risk of toxicity or dermatitis. Sodium lactate has a mildly saline taste, which makes it of interest in instances when the sweet taste of other humectants is not acceptable.

Sodium lactate lowers the surface tension of water

TABLE 2
Surface Tension of Aqueous Solutions of Sodium Lactate[1]

Concentrate Weight %	Surface tension at 29° C., dynes/cm.
0	71.4
1	70.4
10	69.6
30	68.5
40	64.8
50	45.5
60	56.7
70	60.7

to a modest extent. As shown in TABLE 2, the surface tension of aqueous solutions of sodium lactate has a minimum value of 45.5 dynes/cm. at 50 weight per cent sodium lactate.[1]

Compatibility

Sodium lactate is compatible with practically all cosmetic ingredients. The only evidence of significant incompatibility that was observed in this study was the "salting out" of soaps from aqueous solutions. Typical results are shown in TABLE 3. Films cast

TABLE 3
Compatibility of Sodium Lactate with Cosmetic Ingredients

Detergent	Addition of 5% sodium lactate, based on the weight of the solution
20% Potassium coconut soap	Soap layer separated
50% Duponol WAT	No change
50% Miranol C2M Conc.	No change
Gum	
2% Methocel, 100 cps	No change
2% Carbopol 934	Increase in viscosity
2% Carbopol 934, neutralized with NaOH	No change
2% CMC—120 med. visc.	No change
2% PVP	No change

from aqueous gum solutions are clear and plasticized.

Function of Humectant in Cosmetics

A humectant is included in cosmetic products primarily for the purpose of reducing the rate of evaporation of water. A major objective is to prevent the crusting of creams in open jars. Additionally, with the popularity of polyethylene squeeze bottles, moisture loss through the walls is reduced. Significant water loss can result in the separation of the emulsion. In addition to reducing moisture loss, a humectant will also function as an emollient and will promote spreadability of the cosmetic product. It is generally accepted that humectants help to prevent drying of the skin.

Sodium lactate was compared with glycerin in a variety of compositions. While these compositions have been given names such as "moisturizing cream" and "emollient cream," our primary objective has been to compare the two humectants in combination with a range of different cosmetic raw materials. Thus, the names of the products could have been readily changed by including additional active ingredients. These additions could have produced deodorant creams, suntan lotions, rubefacients, and the like.

In most of the formulations we endeavored to include materials that are likely to crust, such as glyceryl monostearate, stearic acid, cetyl and stearyl alcohol, ethoxylated stearic acid, and waxes. Nonionic emulsifiers were used principally, since these are most commonly used in cosmetic emulsions. However, examples based on soap and borax-beeswax have also been included.

Effect of pH

Both sodium lactate and lactic acid are effective humectants. Consequently, it could be expected that in the normal *p*H range for cosmetic products, the *p*H of the preparation would have only a negligible effect on the humectant qualities. Results in TABLE 4 show that over the range *p*H 2.0 to 9.8, moisture loss was reasonably comparable. The *p*H values of combinations of sodium lactate and lactic acid are shown in TABLE 5.

TABLE 4
Moisture Loss from Sodium Lactate-Lactic Acid Systems

Composition	pH	Moisture loss at 30% R.H. after 23 hours
10% Lactic acid	2.1	62.0
5% Sodium lactate +5% Lactic acid	3.6	56.5
10% Sodium lactate	7.3	54.5
10% Sodium lactate +1% Triethanolamine	9.7	60.0
10% Glycerin	—	62.0
Water	—	75.0
20% Lactic acid 10% Sodium lactate +10% Lactic acid	3.6	50.0
20% Sodium lactate	7.4	45.5
20% Sodium lactate +2% Triethanolamine	9.8	41.0
20% Glycerin	—	50.5
Water	—	75.0

TABLE 5
Proportions of sodium lactate and lactic acid required to obtain buffered solutions at specified pH levels

pH of solution	5% Sodium lactate (ml.)	5% Lactic acid (ml.)
7.1	100.0	0
5.9	98.7	1.3
5.5	97.5	2.5
5.1	95.0	5.0
4.9	92.5	7.5
4.7	90.0	10.0
4.6	87.5	12.5
4.2	75.0	25.0
3.9	62.5	37.5
2.2	0	100.0

Preparation and Evaluation of Cosmetic Products

The same procedure was employed to prepare all of the cosmetic emulsions. The ingredients of Part A were combined and heated to dissolve the solids, and to obtain a uniform mixture. The ingredients of Part B were combined, heated to effect solution, and brought to the same temperature as Part A. Part B was then added slowly to Part A, with stirring. The mixture was cooled while continuing to stir slowly. Where the formula also called for a Part C, this was added to the combined Parts A and B at room temperature.

Evaluations of the products with regard to such

(Continued on page 508)

Industry's Interest and Responsibility in Cosmetic Safety

BY WILLARD M. BRIGHT
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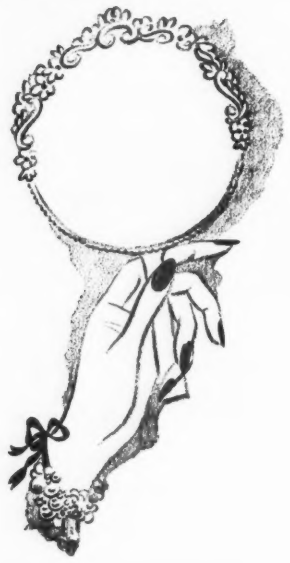
The following three articles were presented at the Symposium, The Scientist's Contribution to the Safe Use of Cosmetics, co-sponsored by the Committee on Cosmetics of the American Medical Association and the Section on Pharmacy of the American Association for the Advancement of Science, at the 127th Annual Meeting of the A.A.A.S., in New York City, December 29, 1960.



Cleopatra was a beautiful woman, and, it is said, was expert in making and using cosmetics. This skill may have been a great advantage to the Egyptian queen, but if she were alive today, I am sure that her talents would be occupied in other ways. Modern women—and men, too—can call upon the formulating skills and manufacturing know-how of a great industry to aid in their search for better looks and a pleasant feeling of well-being.

This industry does not stand alone in providing for the needs of its customers. As we have realized again today, university scientists, practicing physicians, and government representatives are helping to ensure that our modern women have the best and safest beauty aids ever known.

Important as beautification has always been, it is only in the last 60 years that the cosmetic industry has had a real existence. But now, this industry gives every evidence of wanting to make up for any time lost to amateur formulators, like Cleopatra. Today it is one of the most rapidly changing and expanding industries conceivable. Last year, retail sales of cosmetics amounted to 1.66 billion dollars.

For the past 15 years the sales growth rate has averaged 6.3 per cent, about two and one-half times our national industrial average. If we add to the industry's present vitality the fact that the number of potential customers in the 18 to 35 age group will keep on increasing in the next ten years, we realize that the cosmetic industry should continue its spectacular progress.

Commercial success in this field doesn't come easily. It demands great ability to sense and follow changes in women's fashions, and to exploit these fleeting opportunities through the introduction of new products. The rapidity of change, obviously, poses problems for all responsible manufacturers, who understand that each new product must be tested to assure safety in use. If a new or unusual ingredient has been incorporated in the formula (and this, often is absolutely necessary) the effect must be known, not only for the substance alone, but for the formula as a whole.

Product testing is the final requirement to show safety, but much knowledge of the properties of skin and its interaction with chemicals used in product formulations, is needed to guide the cosmetic maker. Industry needs the results of fundamental research to develop its products and, of necessity, must be interested in such work to make better cosmetics.

I plan to discuss with you some of the ways in which industry both uses and contributes to this knowledge, some of the problems in testing for safety, and something about the ways in which industry cooperates with the government regulatory agency to meet its responsibilities for safe products.

It is obvious from the extent of the literature and from the papers in this symposium that the question of how skin is penetrated by chemical agents is an important one. Both in formulating effective products and ensuring their safety in use the answer is needed. If fundamental research can provide a generalized answer, the specific answer for an individual product may be more easily obtained.

We need to know how cosmetics achieve their effects—whether certain components migrate into the skin and affect basic metabolic processes, or whether they remain on the surface of the skin and operate essentially as barriers. They may be barriers to the penetration into the skin by environmental contaminants, or barriers to the outward transpiration of moisture. In either case detailed knowledge of the actual mechanism by which the cosmetic agent achieves its observed over-all effect is required before a final assessment can be made of its function or its safety.

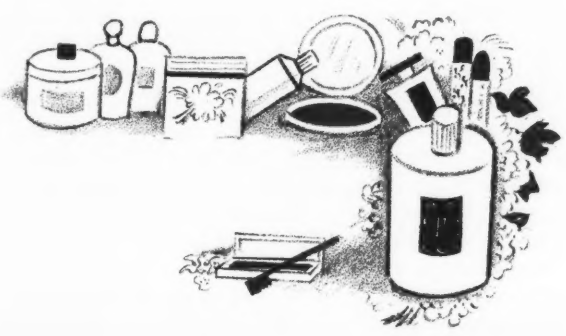
Better knowledge of the moisture effects in living skin appears to be of vital importance to the formulation of improved cosmetic products. We know the effect of many agents on the rate of moisture loss through excised animal skin and excised human skin. But we have less knowledge of what actually happens in the dynamic state of living human skin, and how these processes are affected by topical agents.

Powers and Fox,[1] three years ago, contributed a very interesting discussion of the over-all effect of a variety of agents on moisture loss through living human skin. The effects of the agents they studied varied from a 48 per cent decrease in moisture loss for petrolatum, to a 43 per cent increase for glycerin. Several synthetic surface active agents were included in their investigation, and all of these increased the rate of moisture transmission to some extent.

How do these agents interact with the skin to show such a range in the rate of moisture loss? What is the basic physical-chemical phenomena involved in the process? We should know the mechanism in order to devise better methods of controlling this factor so important to the condition of the skin.

Some years ago we started a program of basic research in Lever Brothers Company to seek the answers to questions like these. I want to discuss with you some of the results obtained by my associates as specific examples of industry's contribution to and interest in this field. Because of the complicated nature of skin, we chose to do some of this work using model systems in somewhat idealized experiments.

Since one important constituent of the skin is protein, Dr. Ira Blei investigated the interaction of a pure protein, bovine serum albumin, with a series of pure surface active agents.[2] As you know, surface active agents in solution tend to cluster together in small aggregates known as micelles. This occurs at a particular concentration known as the critical micelle concentration (CMC). Many properties of these detergents are quite different above and below the CMC. For example, above the CMC an oil soluble dye can be solubilized in a detergent solution.



Blei used this fact to study the way in which detergent molecules interact with protein molecules. He found that the same solubilizing of oil soluble dyes occurs in mixed protein-detergent systems at detergent concentrations much below the ordinary critical micelle concentration. This suggested that detergent micelles may have formed on the protein molecules, with the protein acting as a sort of nucleating agent. The dye is in the same environment whether solubilized by the detergent or by the protein-detergent complex, and it appears that we are dealing with similar aggregates in both cases.

Since many properties of detergents depend on the micelles, it is of value to know that these aggregates of detergent molecules can occur on protein molecules and that this phenomenon occurs at concentrations much lower than would be expected. We believe that such aggregates form on the skin proteins when washed by surface active agents, as in a shampoo. This poses a complication in understanding the interaction of detergents with skin. It now cannot be considered to be only a process of free diffusion of single molecules but must also involve the micelles.

Although these experiments are valuable in further understanding the mechanism of protein-detergent interaction, the actual process going on in living skin is very complicated and doubtless involves many factors. Again, in our laboratories, Dr. B. Choman[3] has shown that a synthetic detergent, sodium lauryl sulfate, penetrates four times as far into living guinea pig skin as it does into dead skin.

He established this by using a radioactive detergent and an improved autoradiographic technique. In this method, sections of skin 25 microns thick are obtained by slicing parallel to the skin surface. The presence of radioactive detergent is determined by placing the sections in contact with a photographic film. By counting the number of slices that show the presence of the radioactive detergent, one is able to measure depth of penetration. This technique was also applied to a study of the penetration of radioactive nickel 63 brought about by pretreating the skin with lauryl sulfate. Here the penetration of living skin was about twice as deep as that of dead skin, which emphasizes again the desirability of testing procedures using living tissues whenever possible.

Drs. Vinson and Choman[4] reported further experiments with nickel and lauryl sulfate, tying together two very important fields of cosmetic research—sensitization and skin penetrability. Nilzen and Wikstrom[5] had previously noted that lauryl sulfate helped in-

(*Continued on page 546*)

Dermatological Research And Cosmetic Formulation

BY ALLAN L. LORINCZ, M. D.
ASSOCIATE PROFESSOR, SECTION ON DERMATOLOGY, DEPARTMENT OF MEDICINE, UNIVERSITY OF CHICAGO.

Although it is practically axiomatic that safe and effective formulation of cosmetics must be based on a firm foundation of knowledge gained from sound basic dermatologic research, it is a curious paradox that this fundamental point does not seem to have been recognized by the huge cosmetic industry, as judged from the indeed trifling extent to which it has contributed financial support for such research. This paradox is all the more striking when contrasted with the enormous sums spent on promotion and sales appeal research by an industry, which, in the United States alone, retails well over a billion dollars worth of product annually, even if we define cosmetics in the relatively narrow sense delineated by the Federal Food, Drug and Cosmetic Act of 1938.

Despite the negligible direct support for dermatologic research from the cosmetic industry, a number of examples of the great impact that such research, as supported so far from limited miscellaneous sources, may have on cosmetic formulation can already be cited. Often this research has been soundly applied by the industry to produce cosmetics that are both effective and harmless. Unfortunately, however, such research findings on occasion have been unsoundly or prematurely applied to cosmetic formulation to result in products that at best fail to measure up to the claims made for them, and which may even lead to harm.

On the credit side of the relationship of dermatologic research to cosmetic formulation, two areas in particular can be cited. One is the area of emollient preparations. In this field the fundamental studies in the past decade, mainly by Irvin Blank,[1, 2] but also by Gaul and Underwood,[3] have entirely revised the time-honored view of the primary role of lipids in maintaining the smoothness and suppleness of the skin surface. Blank, in a series of simple, classic experiments on isolated callus strips, showed that cornified epithelium remains soft and pliable as long as it holds a certain minimum amount of water, namely about ten per cent, but that it becomes brittle when its water content drops below this point. The presence of lipids alone does not keep such cornified material flexible, if it is allowed to become desiccated; and, once dried, such material cannot be softened by the addition of lipids only. Blank also noted that under

most common environmental conditions the cutaneous horny layer tends to dry out, since more water can be evaporated from the surface than will reach there by diffusion from below because of the presence of a water barrier at the base of the horny layer. At atmospheric relative humidities of 60 per cent or higher, however, the horny layer does not dry out beyond the limit of pliability to cause chapping, because an equilibrium state exists that does not permit the moisture content of the horny layer to drop below the critical ten per cent level. Under the low relative humidities of winter weather and heated houses, or on exposure to dry windy weather, water loss may be great enough to upset this equilibrium and produce chapping.

Gaul and Underwood's further clinical observations on the role of low relative humidity and wind exposure in chapping added strong support to Blank's views. Blank additionally interpreted the beneficial effect of simple greasing of the skin against the dryness, flaking, and superficial fissuring of chapping, to result from the water-conserving effect of the occlusive greasy layer. Additional studies by Rothman, Nicolaides, and Wheatley[4, 5] on the detailed chemical analysis of skin surface lipids; the work of Rothman,[6] Bolliger,[7, 8] Szakall,[9, 10] Spier,[11] Flesch,[12–14] co-workers and others on the nonkeratin components on or in cornified epithelium; and that of Sulzberger, Herrmann and associates,[15] and others on sweat-sebum emulsification and secretion—all have further clarified the mechanisms that tend to maintain the normal hydration, smoothness, and suppleness of the cornified skin surface. These studies have found wide application in the successful formulation of emollient creams and lotions and have been cleverly exploited in cosmetic advertising from the angle of the importance of dewy skin moisturization.

A second large area that well illustrates how basic dermatologic research has been soundly applied in cosmetic formulation is the field of sun-protective or so-called suntan preparations. Such preparations have been formulated on the basis of detailed knowledge of the erythematogenic spectrum of sunlight and on the several mechanisms by which exposure to sunshine leads to an increase in cutaneous pigmentation.

The action spectra of sunburning and suntanning were first established through the pioneering studies of K. W. Hausser and Vahle,[16] I. Hausser,[17] and Henschke and Schultze.[18] These workers determined that sunburn is primarily caused by a relatively narrow band of wave lengths in solar radiation ranging between about 2900 and 3100 Angstroms. Furthermore, their work indicated that pigmentation could be rapidly intensified by irradiation with relatively nonerythematogenic longer wave length ultraviolet rays.

Further studies by Miescher and Minder[19] and Felsher, Rubin, and Rothman[20] more precisely defined this relatively long wave length pigment darkening spectrum as extending between 3000 and 4300 Angstroms with a broad peak at about 3400 Angstroms. It was also shown that this type of pigmentation appeared within a few minutes after irradiation and depended essentially on a rapid direct photo-oxidation of relatively light tan reduced melanin pigment in the superficial layers of the skin to its more oxidized darker form.

By way of contrast, the true suntanning that follows irradiation with the sunburn spectral wave lengths has a clear latent period of one to two days and reaches its maximum only after one to three weeks. Finally, with the noting by Rothman and associates[21, 22] of the highly effective screening action of para-aminobenzoic acid and some of its derivatives against the sunburn spectrum, in the face of it's total lack of screening efficacy in the immediate pigment darkening spectral range, the essential principle was defined about which the modern types of sunburn preventing preparations that permit photo-oxidative pigment darkening could be formulated.

In practical formulation it generally has not been desirable to use an amount of sunburn preventing agent which completely eliminates erythemic skin responses to prolonged sun exposure, because the permission of some slight effects of such radiation with resultant true tanning is needed, at least initially, to build up cutaneous solar tolerance, as well as to provide a sufficient supply of new melanin which can be photo-oxidatively darkened by the nonscreened longer wave length ultraviolet rays.

The cosmetic industry has also drawn heavily, and for the most part soundly, on the large body of dermatologic basic research and clinical experience in the realms of topical toxicity and cutaneous irritancy, allergic sensitization, and percutaneous absorption.

I would now like to turn briefly to the less fortunate side of the ledger, namely the misapplication of dermatologic or basic medical research to cosmetic

(*Continued on page 514*)

COURTESY PROCTOR & GAMBLE

New Methods for the Study of Percutaneous Absorption

BY KENNETH WILSON UNITED STATES ARMY CHEMICAL RESEARCH & DEVELOPMENT LABORATORIES, MARYLAND

My task is to review some of the newer methods of measuring the amount of chemical agents that pass through the skin when they are applied to its surface.

You may ask why this subject of skin penetration is appropriate to our subject of the safe use of cosmetics.

In answer, let me paraphrase the remarks of Dr. Everett Saul of the Bristol-Myers Corporation in his address before the Society of Cosmetic Chemists in September 1959, during a seminar devoted to the subject of percutaneous penetration.

Noting that biologically active materials have widened the horizon of the cosmetic chemist, who would not hesitate to use them in his products if they elicited a desirable response from the skin, *without harmful side effects*, Dr. Saul commented that the fact that a skin response is obtained does imply penetration and absorption of the substance, and thus involves the cosmetic chemist in matters of rate, depth, and route of penetration of many different chemicals.

If it is found that the new ingredient produces problems of sensitization, irritation, or systemic toxicity by reason of its penetration through skin, that product must be abandoned.

As Dr. Montagna has explained [Problems of Biological Research and its Relation to Cosmetic Development. DCI 88(3): 312], the skin is not a simple protective covering, but is a complex system of subsidiary organs, some of which—the sweat glands, for instance—vary in activity with changes in the environment, or even the emotional status of the whole individual.

These dynamic properties of the skin, as well as its complexity and thickness, prevent us from treating it as a thin inert membrane, acting only as a simple molecular sieve with invariable physical properties. If it were the latter, the penetration of skin by many types of chemicals could be predicted with fair accuracy from knowledge we already possess; but as it is, when we need to know the rate of penetration of almost any substance, we are at present forced to use some kind of quantitative analytical method.

It is to be hoped that eventually the accumulated data obtained by such analyses will enable us to predict the behavior of most classes of chemical compounds, and indeed, some progress has already been made along these lines, but a great deal more remains to be done before prediction becomes reliable.

TABLE II

The rate of inactivation of cholinesterase following percutaneous absorption of sarin

Time	Inactivation	Amount of Sarin Reaching the Blood Stream*
minutes	*per cent*	*mμM*
10	0	0
20	10	21.4
30	17	35.6
45	29	57.0
60	63	121.0
75	86	185.5

*** Calculated from Figure 1 (Calibration curve)**

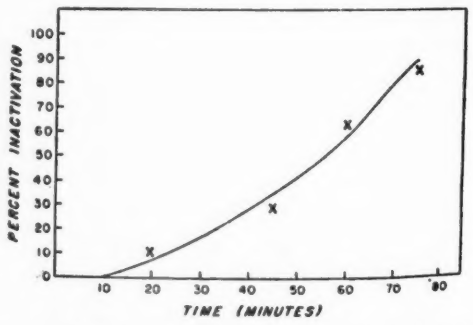


Figure 1. Inactivation of cholinesterase by percutaneous absorption of sarin, from Griesemer, Blank, and Gould.[1]

If then, we accept that analytical measurement is always required, what methods are available to us?

Time does not allow a comprehensive review of the many methods devised for specific cases, and I propose to restrict the discussion to a few fairly recent and fundamentally different methods which serve to illustrate the various approaches that could be of value to the cosmetic industry.

These methods fall into three main groups: (A) methods that can be used in the living person or animal, (B) methods applicable to isolated pieces of skin, and (C) the use of model systems.

At first sight, group A would appear to have the greatest interest for those studying cosmetics, but, in fact, it is here that the most severe limitations on a

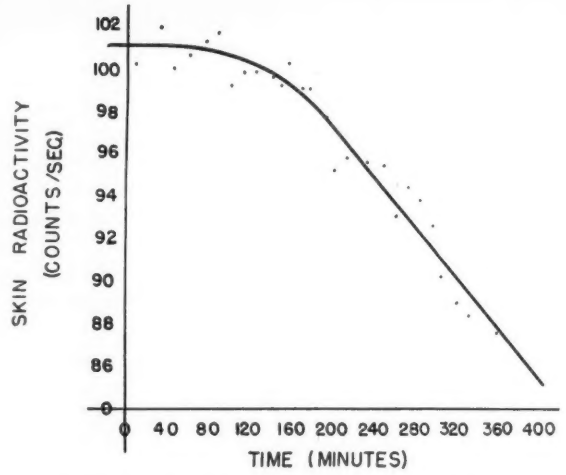


Figure 2. Loss of radioactivity from human skin *in vivo* during absorption of radioactive tri-butyl phosphate, from data obtained by M. Ainsworth.[3]

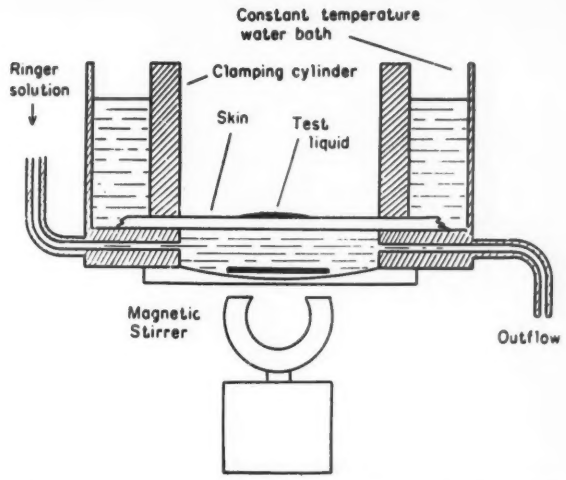


Figure 3. Diagram of section of a single diffusion cell for study of isolated skin, from M. Ainsworth.[7] In this study, a battery of five cells was used.

quantitative approach are experienced—particularly where human subjects are concerned.

If the chemical being investigated elicits an observable biological response from the organism, it is sometimes possible to correlate the response with time, following application of a given quantity of the compound to the skin.

Griesemer, Blank, and Gould[1] used this approach successfully in studying the penetration of the nerve gas, sarin, through the skin. FIGURE 1, taken from their paper, illustrates the kind of dose response curve obtained for this compound and from which a measure of the rate of penetration through skin was obtained by comparing enzyme inhibition, following percutaneous absorption, with that obtained by intravenous injection of known amounts of inhibitor. The success of this work depended upon the irreversible inhibition of the enzyme cholinesterase by sarin, and the availability of extremely sensitive and accurate methods for measuring the enzyme in blood.

This technique can be applied safely to work on human subjects.

It is not to be expected that a similar situation would arise frequently when cosmetics are under study in human subjects, and a more generally applicable method is desirable.

One such method involves the use of radioactive isotopes. Generally, there is no great difficulty in preparing a sample of the biologically active compound with one, or more, atoms radioactive and therefore capable of being detected and measured even when present only in minute amount.

Malkinson[2] in this country and Ainsworth[3] in England have developed methods using radio-isotopes in which the rate of disappearance from the skin surface is measured. Malkinson used a thin window gas

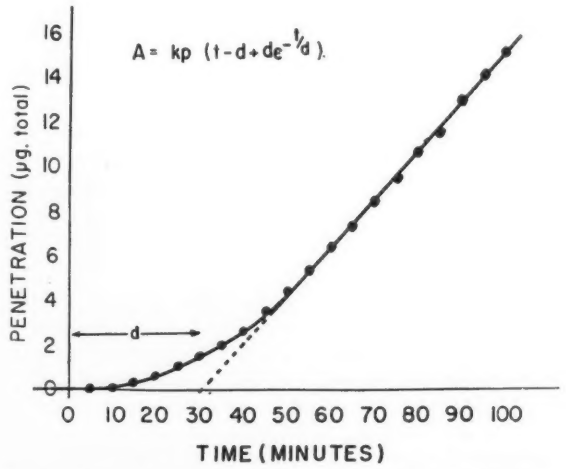


Figure 4. Penetration of skin by radio-active sarin, from M. Ainsworth. The curve gives the total amount of substance penetrating the full thickness of skin at any time.

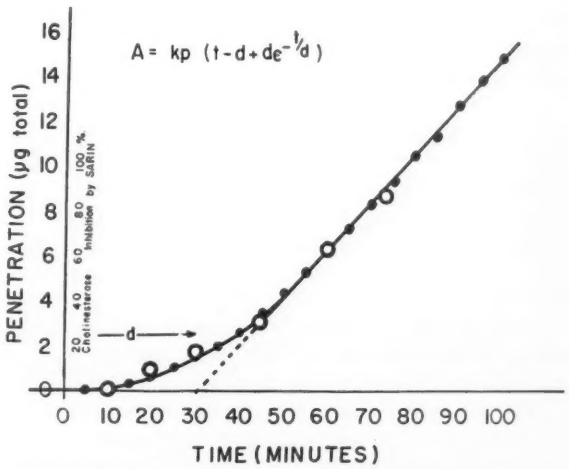


Figure 5. Figure 4 with data of Griesemer, Blank and Gould[1] superimposed. (The apparent relationship between the two ordinate scales is fortuitous, but the identity of the two curves is real.)

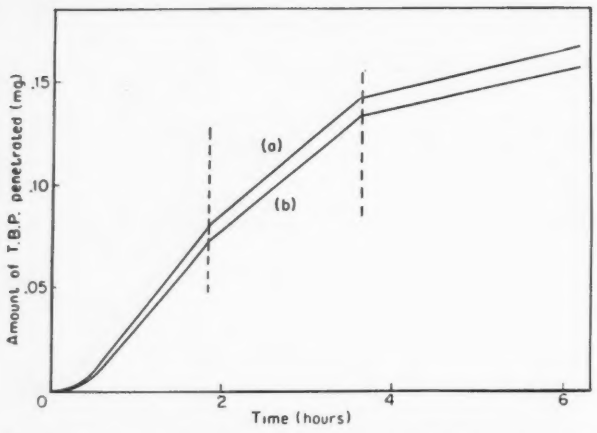


Figure 6. Rates of penetration of perfused pig skin by tri-butyl phasphate as measured by (a) disappearance from the skin surface and (b) appearance in the perfusate. At the times indicated the perfusion flow was reduced. From M. Ainsworth.[7]

flow cell similar to that originally described by Nelson,[4] who devised the cell for counting the low energy emission from C^{14} compounds, while Ainsworth used a Lucite plate collimator and an end-window Geiger Mueller tube to count the much higher energy β particles from P_{32} compound.

FIGURE 2 is representative of the data obtained by the "surface-loss" method when organo-phosphorus (P_{32}) anticholinesterases are applied to the skin, and evaporation is prevented by a mica or Mylar patch. After the initial delay the radioactivity decreases linearly with time as the material enters the skin.

We should note that this method of measuring the rate of disappearance from the skin requires much smaller amounts of radioactive material than is the case when we determine how much of the drug has passed into the circulation by analyzing the blood. Thus, if we need a count of 60 disintegrations a minute for reliable measurement, and we use 10 ml. of blood in each test, we can calculate that, if 1 per cent of the dose applied to the skin enters the body and is evenly distributed, we must apply more than 100 micro-curies to the surface.

This is a dangerous amount of activity, but the "loss" method needs the application of less than one micro-curie for an equally good determination and is therefore safe even when high energy β emitters like P_{32} are used.

Used properly, this method does give a reliable estimate of the rate of penetration into the skin, but it does not tell us what happens to the material after it has entered the first two or three millimeters, that is, a depth sufficient to absorb the radiation from the diffusion front.

A quite different tracer method involves the use of dyes—usually fluorescent ones made visible by ultraviolet light. This technique is not quantitative in a proper sense and is limited to use with liquid penetrants, but it could be valuable in studying cosmetics.

A dye stuff is found which, when dissolved in the liquid being tested, is carried along with it. Substances that penetrate very readily show a more rapid diminution in the intensity of the fluorescence at the surface of the skin than is the case with poor penetrators.

This last statement requires some qualification, however, because many liquids tend to spread over the skin, and spreading may not be directly related to penetration.

Frequently, the effect of one topically applied substance may so alter the characteristics of the skin that a second agent applied in the same place may both spread over a wider area and penetrate more quickly.

For instance, pre-treatment of skin with a very low concentration of mustard gas in alcohol renders the skin much more permeable, and this effect is easily demonstrated by the dye method.

As a matter of interest to the cosmetic industry, the commonly used thioglycollate depilatories do the same; it would seem that this last effect is very appropriate to the discussions in this symposium.

One can see that, if a person were to use a depilatory that is itself quite safe, but then followed it with a skin conditioning cream containing a powerful pharmaceutical, such as a sex hormone also safe by itself, the amount of hormone absorbed into the circulation could be greatly increased, possibly with unpleasant effects to the user. It is not difficult to postulate other hypothetical combinations which could be hazardous.

My third example of newer methods applicable to the intact human skin refers to the recently published work of Stoughton, Glendenning, and Kruse.[5] These workers compare the vasodilatation produced by a suitable drug when applied to the skin with that obtained when a smaller quantity of the same drug is injected intradermally. (*Continued on page 521*)

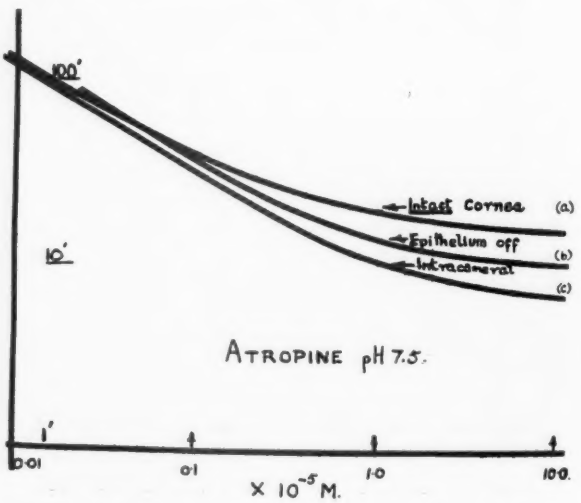


Figure 7. Curves showing different time delays in the reaction of the rat pupil to atropine solution. In (A) the cornea is intact, (B) the epithelium is removed, (C) the drug is put in direct contact with the iris. *Ordinate* is the time required to reach 50 per cent of maximum pupil area. *Abscissa* is the molar concentration of atropine.

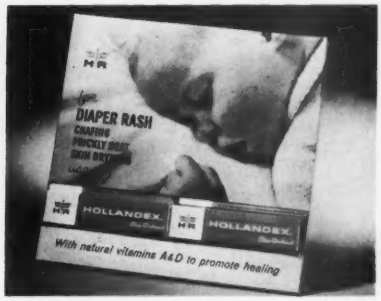
FOLDING CARTON COMPETITION WINNERS

Award winners in the 1961 Folding Carton Competition sponsored by the Folding Paper Box Association of America were announced at the Association's annual meeting in Chicago. Packages were judged as to general merchandising superiority, superiority of printing, construction, and potential new volume use. The First Award winners in medicinals and cosmetics are shown below.

First Award, general merchandising superiority in cosmetics and personal selling, Complexion Control Liquid Make-Up dispenser display, Lanolin Plus, Inc.; boxmaker, Weyerhauser Co. A compact display that graphically sells its product, in five colors and varnish, offset lithography; super white patent coated Kraft back solid bleached sulphate.

First Award sharing honors with Lanolin Plus above, Tussy Beauty Treatment line, Lehn & Fink Products Corp.; boxmaker, Container Corporation of America; designer, Seymour Kent, Lehn & Fink. Beautiful printing, unusual color, lively artwork and copy, good brand identification. Line done in 11 colors, offset lithography; Concorotex, manila back.

First Award, general merchandising superiority, medicinal products, a hexagonal sleeve with cuffs holding a can of infant formula, Mead Johnson and Co.; boxmaker, Continental Can Co., Inc.; designer, Tom Horty, Mead Johnson. Presents excellent company image, appealing to a new mother. In three colors, letterpress; 0.014 solid bleach sulphate.

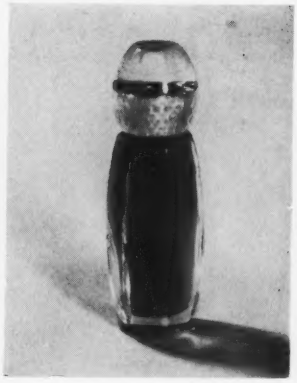


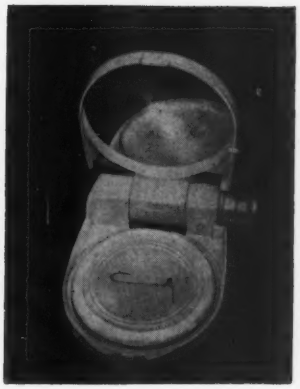
Left, First Award, general merchandising superiority, carriers, Mead Johnson; boxmaker, Paper Package Co.; designers, Charles Gneagy, T. Horty. Four colors and varnish, letterpress; 0.020 Kraft lined to paper backed lacquered bright silver foil. Center, First Award, superiority of construction, combination vitamin shipper and display rack, Topco and Associates; boxmaker, Weyerhauser; designers, Topco and Benolken, Douglas, Minnick. Four colors on cards, two on trays and packers, letterpress; cards, Glosstex; trays and packers, white patent coated news. *Right*, First Award, general merchandising superiority, medicinal, dispensing display unit, Holland-Rantos Co.; boxmaker, Lord Baltimore Press; designer, Dixon & Parcels Associates. Display in six colors and lacquer, offset lithography; International paper experimental.

Send us your carton (even if you love it). If w
can't beat it on design, printing and strength, a
no increase in cost, our name isn't **Olin**

PACKAGING DIVISIO

FOREST PRODUCTS OPERATIONS,
P.O. BOX 1225, WEST MONROE, LA.





Coty's Travel Mist (left), a white container of polypropylene molded by Kings Men, Leominster, Mass. The gold band is of nontarnishable gold-colored Mylar. The uncoated glass bottle within is by Foster Forbes, and the actuator by V.C.A. One of the newest developments at Coty (center) is a clear plastic cap for a perfume bottle, which retains the beauty of a glass stopper. Cap is of crystal clear polystyrene by Foster Grant Co., Inc., with polyethylene liner molded by Harrison Products Co. Crosshatching at cap base, and next to liner within, disguises the liner with a look of cut crystal. Bottle by Carr-Lowrey Glass Co. Duette (right), a full-sized, refillable pressed powder compact and lipstick combination molded by Morningstar of Styron 475 from The Dow Chemical Co. The plastic simulates mother-of-pearl.

DESIGNING COTY'S PACKAGES

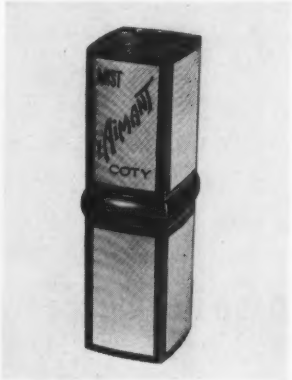
What the designer has to consider in using plastics for perfume and cosmetic packages.

Eric de Kolb, independent designer who creates all of Coty's packages, starts with a product to be packaged. It may be new, or it may be one for which a new package is planned. Whichever it is, he is very likely to have been involved with it before his designing work starts, since he is a member of the company's merchandising group. This means that he works closely not only with those involved in selling the finished product, but also with the technical staff, which creates products, with the manufacturers of the packages Coty uses, and with the production staff, which does the actual packaging.

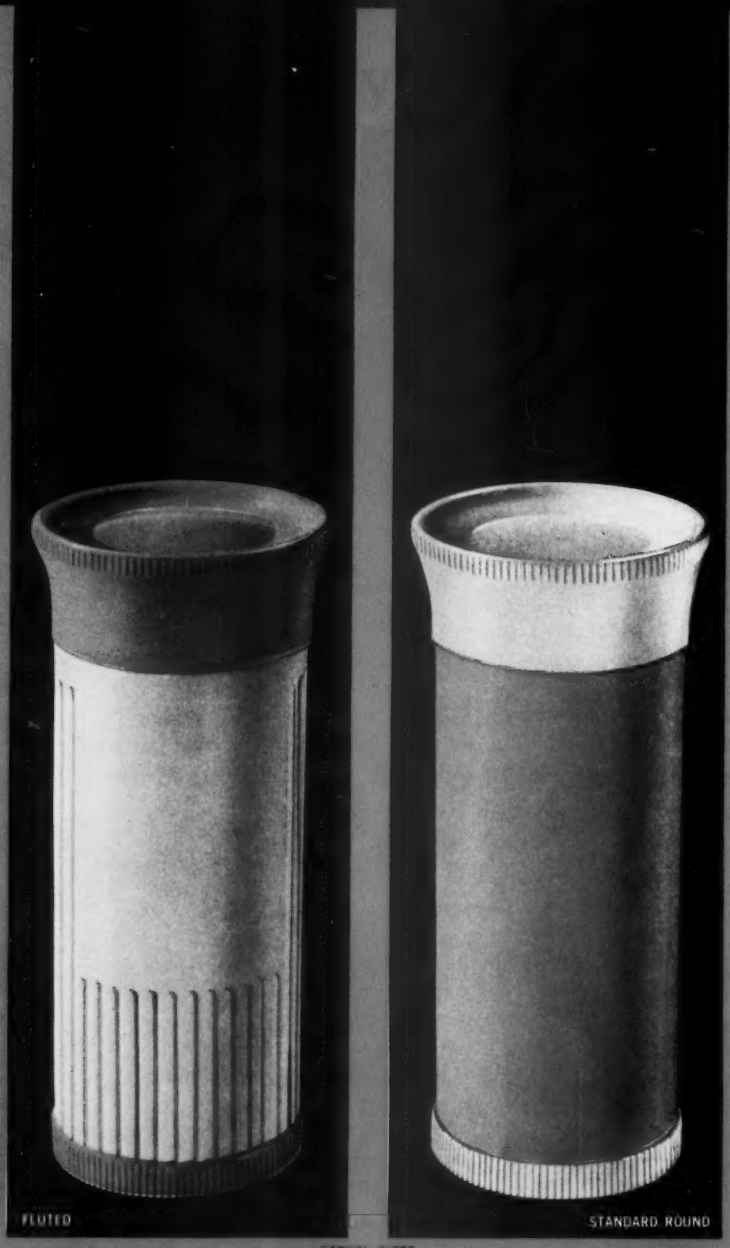
"I always have plastics in the back of my mind as the most desirable material for any package," says Mr. de Kolb, "because of their advantages for the consumer." They are light, a characteristic women appreciate especially in cosmetics carried in the hand-

(Continued on page 539)

A loose-powder compact (left) in pearlized polystyrene by Koppers Co., Inc., molded by Harrison Products Co. The inside unit, which holds the powder, is an unbreakable self-hinged container in white, molded in one piece of polypropylene. Eau de Toilette (center) in a glass bottle with a plastic cap molded by Four Mold and gold-plated by Sirad. The plastic case is of polystyrene by Foster Grant Co., molded by Harrison Products. Coty is now experimenting with Tinuvin, a clear plastic by Geigy Chemicals, which it is hoped will screen out all ultraviolet light, adding to the life of the toilet water. The Petite Mist (right) of medium-impact styrene molded by Pyro Plastic, with applied panels of Mylar from Coating Products. Inside bottle by Foster Forbes has an actuator by The Risdon Mfg. Co. that meters the spray.



NEW DELUXE SUPER SIZE SWIVELPAK®*



ACTUAL SIZES

The Deluxe ARISTOCRAT

To meet the demands and need for a superb Propel-Repel container in a generous 2½ oz. size. (app.)

Calumet has created the smart utilitarian units shown above. Designed solely for solids, these new deluxe containers embody the same patented, foolproof features recognized in all Swivelpak Propel-Repel containers.

STANDARD ROUND or FLUTED...

USES: Colognes, deodorants, pre-shave, after-shave and medicated sticks.

COLORS: Solid color or combination of colors

CAPACITY: 2½ oz. (app.)

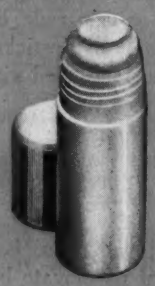
CALUMET MFG. CO., 565 Fifth Avenue, New York 17, New York

*U. S. Pat.

Canadian Affiliate: Eric H. Hardman Limited, P.O. Box 503, 1 Prince Charles Road, Brantford, Ontario, Canada

ROLL-ON APPLICATOR*

Features: Large ⅞" Ball in self-sealing container. Provides greater coverage with minimum time for application.
Use: For hand and face lotions and liquid deodorants.
Colors: Solid color or combination of colors.
Capacity: 1½ oz. (app.)



Oval
SOLID STICK APPLICATOR*

Features: Propel-Repel. "He-man" size. Convenient oval shape for maximum surface coverage.
Use: Pomades, cerates, non-alcoholic products.
Colors: Solid color or combination of colors.
Capacity: 3 oz. (app.)

CREAM APPLICATOR*

Features: Propel-Repel. Applies directly to area, in quantity desired. Rub-in and massage, eliminating application with fingers.
Use: Beauty creams, deodorant creams, unquents and medicated creams.
Colors: Solid color or combination of colors.
Capacity: 1½ oz. (app.)

Standard Round
SOLID STICK APPLICATOR*

Features: Propel-Repel. Airtight container.
Use: Colognes, deodorants, pomades and medicated sticks.
Colors: Solid color or combination of colors.
Capacity: 1½ oz. (app.)

4 recognized and proven Swivelpak containers!

Your cosmetics packaging dollar returns a full one hundred cents of value when you spend it for Calumet SWIVELPAK Containers. That's because Calumet Containers *look* so well, *perform* so well in constant use, and are STILL sensibly priced for all their fine features.

Calumet Containers are precision-engineered for standard quality. They're mass-produced under the latest methods so you realize substantial unit savings. Easily filled, too . . . a further economy in your operational costs.

Although Calumet's extensive line covers most current toilet preparations, our superior research and development facilities, plus our long experience in the field, are always available to you in the solution of any special or unusual container problem.

Samples, quotations and full information will be immediately forwarded upon request. Call OXford 7-6750, write or wire.

Swivelpak® stick containers also available in ½ oz. and 1 oz. sizes.

CALUMET MFG. CO., 565 Fifth Avenue, New York 17, New York

*U. S. Pat.

Canadian Affiliate: Eric H. Hardman Limited, P.O. Box 503, 1 Prince Charles Road, Brantford, Ontario, Canada

Packaging and Selling

Everybody knows that cosmetics for the bath, a sturdy and ancient part of the cosmetic industry but not a very big part since it excludes soap, have seen very substantial sales during the last four or five years.

Of course, the pacemaker in this invigorated part of the cosmetic industry is Jean Nate. The conservative and unique way in which this company is managed and the extraordinary restraint with which the product is sold have been the reasons for open-mouthed wonder in the industry, whenever anyone stops to notice the really extraordinary sales growth of the Jean Nate line.

This has stimulated quite a number of people in the industry to get aboard this flourishing band wagon. Bath products have been a favorite of the perfume manufacturers because bath oil, which is coming into such substantial favor in this industry, has an inherent appeal in the pleasure the user takes in the particular fragrance.

It also seems true that what amounts to a separate coordinated line is being developed for the bath by the industry.

The products in the bath line just announced by Matchabelli are (1) dusting powder, (2) cologne spray, (3) skin perfume, (4) dry skin treatment, (5) bath oil, (6) after bath cologne.

A newcomer in the retail cosmetic field is Nethercutt Labs., a company that has been producing cosmetics for the trade since 1933.

Now, with its newly created Jac Robaire Division, Nethercutt is putting on the market a new therapeutic cream called Imagique.

Soon to be announced by this division will be a major fragrance line, and a new, complete men's line.

According to the founder of Fuller Brush, men are better than women at selling cosmetics.

In his new book, *A Foot in the Door*, Mr. Fuller describes how his large house-to-house company entered the cosmetic business.

At first, the Fuller salesmen objected to selling cosmetics. Consequently, a large sales staff of Fullerettes, house-to-house saleswomen, were developed. At full strength, this group of women reached 18,000. Results from this sales force, however, did not satisfy the executives of Fuller Brush, so the Fullerettes were disbanded. The company returned to the regular Fuller Brush salesmen for the sale of their cosmetics.

After a time the men learned that cosmetics had definite advantages in establishing new contacts, and sales began to soar.

We have just read that liquid Metrecal will be dispensed from 2,000 automatic vending machines in industrial plants and office lunch rooms.

The automatic canteen will place Metrecal in a new machine called a General Merchandiser, along with various food items and drinks.

This in-store, in-factory and in-office market, via the vending machine, has been growing enormously in the last several years. It is now taking a large part of the total gross market of vending machines, which sells quite a bit in excess of a billion dollars a year.

The vending machine has one enormous advantage over self-service, the opportunity for theft of little items has been reduced to a minimum. Which is why we wonder that some of the people in this trade, both in the proprietary medicine field and in lipsticks or other basic cosmetic items, have not ventured vigorously into this vending machine market.

The Automatic Canteen Co., the big one in this industry, apparently had been the most active in machine vending in factories.

A Chicago private label distributor, Topco, is reportedto have begun distribution of its private label beauty and health aids in the initial distribution of 25 supermarkets.

The d'Azur line includes shampoos, hair spray, hand lotion, and deodorants and another control line has aspirin, mouth wash, and a limited number of family remedies.

The Sun Chemical Company, makers of printing inks, has employed a color expert as a consultant to study color preferences of the future, particularly in its relation to packaging and display.

Here are some of the predictions of this color expert. The most marketable color by 1970 would be a bright flame red, followed by a bright blue, with emerald green in third place.

The report that Ortho Pharmaceutical Corp., a division of Johnson & Johnson, will soon have a birth control pill makes it look as if this branch of the industry is beginning to accelerate.

It is more or less official from Washington that we have been in some kind of a recession since 1958.

Of course, quite a few economists do not agree, and, from the record, there is no reason why the majority of businessmen should do so. Certainly Wall Street, in its actions, is denying any such thing.

At any rate, we recently discovered a little poem in the July, 1921 issue of DRUG & COSMETIC INDUSTRY that seems appropriate. It originally appeared in *The New York Herald Tribune.*

Business Readjustment

"Business is bum," sighed the young stock broker,
Lighting a weed in the Spring Lake smoker.
"Business is dead," moaned the capitalist barber,
Trimming a sail in the breeze at Bar Harbor.
"Business is punk," mused the dealer in acid,
Sinking a putt on the sixth at Lake Placid.
Business is sad—on the verge of stagnation,
Now is the time for a good long vacation!

The ethical pharmaceutical advertisement placed by Bristol Laboratories in *Modern Medicine* scored the highest reader interest for three consecutive issues, according to a survey conducted by Readex.

The advertisement, announcing Bristol's new synthetic penicillin, was a four-page, four-color insert that contained the complete text of the "official package circular" as approved by the FDA. It received a physician interest rating of 36 per cent for the first two issues and rose to 39 per cent in the third.

What is the cost of a sales call by one of your salesmen?

This is a figure that ought to be rated among the items of essential information, because it could make quite a lot of difference in your annual statement.

How many companies finance a salesman at $20 a call and have him make four calls a year on a customer worth $80 a year, when the gross profit from that customer's business may be $30 or $40 at the most?

Probably as much money is wasted on sales calls that cannot possibly produce a net profit as on any other element in the over-all cost of distribution.

Recently the Sales Executive Club came up with a composite figure of $18.92, after investigating over 300 companies.

The Laboratory of Advertising Performance is said to set a net cost of $22.33 (an increase of 59 per cent in ten years).

Still another survey, using a sliding scale according to earnings, came up with $13.30 for a $12,000-a-year man, $19.69 for an $18,000-a-year man, and $26.26 for a $24,000-a-year man.

The cost of making a call by a salesman depends, not only on what he earns, but also on the time and expense consumed in getting to a customer, as well as on some other variables.

However, no matter how you arrive at this cost, there ought to be some basis that you can use to find out whether your salesmen are consuming a lot of time for a net loss on customers that are not worth selling, either because they are located in a difficult place to reach, are isolated so there are no calls to be made conveniently near, are small-time buyers, are poor credit risks, and so forth.

After all, a customer on whom you consistently lose money is not only a money loss. He may be a dead weight on your distribution system, with some effect on your more vigorous customers.

When should a retailer go into the private label business?

According to a group of marketing executives discussing detergents, here are the rules of the road.

(1) To be successful, the product must have a quality equal or better than the national brand.

(2) It must be lower in price than any well-known, well promoted brand.

(3) It should be strongly featured in jumbo size.

(4) It should be handled by a chain with other private-label items, so that the consumer will get an image of a "family" of items.

None of these marketing executives touched upon one of the chief grievances of many manufacturers in competing with the private label. This grievance was recently outlined by an executive of the National Brands Foundation who, in effect, accused many private label manufacturers of simply taking a free ride.

We believe there is some justification in this. Therefore we would add still another qualification, whether the retailer is willing to invest money in research for product and packaging improvement, rather than waiting until this is accomplished by some manufacturer whom he can promptly imitate.

We think that the outstanding weakness of most private-label lines rests upon the public's subconscious feeling that they are pure and simple imitations of popular national brands.

The retail revolution of the last ten years has produced so many dramatic changes in shopping habits and in retailing that almost everybody has been prone to think retail changes have gone as far as possible and a leveling off period is now underway.

To those holding such a complacent view, it must come as a shock to find that quite a few people are now beginning to question the stability of many of the developments that we have thought of as the last word in retailing, notably the shopping center and the supermarket.

In a recent discussion among retail experts, it was agreed that while the shopping center has not yet reached its full potential—in many parts of the country there are still opportunities for expansion—nevertheless certain weaknesses are appearing in the

when you make your next packaging decision, we'd like to be on hand showing you how readily liquids dispensed by the new captive cap closures are used, used up, and bought again

Garmold Plastics Division, Totowa Borough, New Jersey CCA CONTAINER CORPORATION OF AMERICA, CHICAGO 3, ILLINOIS

shopping center which have not been considered too serious up to now.

Here are some of the weaknesses that are emerging, as determined in surveys of shopping preferences:

1. Hardly any shopping centers are truly "one-stop" shopping places as claimed. Too many customers will have to go to the center of the town or to another location to complete their shopping.

2. In many shopping centers the customer has to walk too far from the place the car is parked. When two or three stores are visited and packages are carried, this becomes a serious inconvenience.

3. Many shopping centers are cluttered with small merchants who are not particularly efficient, making the center vulnerable to a nearby discount house or to other shopping influences.

4. Many centers have definite limitations, such as no competitive retailers, a single chain, and so forth.

What may be a new development in retailing even more dramatic and devastating to established retail habits than the shopping center, is the big, new highway store.

American highways are fast becoming a continuous pathway linking town and cities over long distances. Important stores located on these highways, with ample parking facilities immediately adjacent, may develop into a cotninuous straight-line shopping center far more advantages to the shopper than many of the cluttered, inconvenient current centers.

Another change some experts think may come is a fight for survival on the part of the supermarket in competition with the discount house or the discount center, among which is that strange new form of retailing, the closed-door discount house.

The supermarket did bring a great many conveniences to the consumer which meant, to a large extent, their replacing the small chain store and many independents.

But while the supermarket has accomplished a number of things which the consumer likes, notably a one-stop shopping center for packaged goods, meats, fruits and vegetables, bakery and dairy products, it also demanded cash from the customer, and forced the customer to do all the work himself, including taking the products off the shelves and delivering them to the home.

Despite this, by and large, the supermarket has not reduced the cost of food, although it has a reputation as a low-cost operation.

For this reason, the supermarket is vulnerable to the various forms of discount retailing, and, the deeper the supermarket goes into nonfood products, the more it becomes vulnerable to such new competition.

Although this industry has done a lot of work on antioxidents and in preventing and delaying rancidity in certain materials with superior cosmetic qualities, it has, nevertheless, to a very large extent, avoided some of the finer vegetable oils which were once the basis for some of the industry's excellent creams. An example is the almond oil creams of a generation ago.

One new cosmetic company now in a testing period but not yet ready for marketing, believes it has a solution to this problem.

If this line ever comes to commercial life, it will be known as the first "refrigerated" cream line in cosmetic history. We hope it reaches the market. Although there will be obvious obstacles, we think it is an excellent idea opening opportunities for a brand-new idea in creams.

Let me quote a letter from this pioneer. "Actually, I have the first batch of the facial lift and the nourishing oil. I have never seen such visible, instantaneous results on a dry skin as from this oil. Many appetizing natural oils are included. All products will spoil if not refrigerated. There is vitamin A also, which will lose its potency if not refrigerated."

Here's what "they" say are among the objectives for the packaging equipment people.

1. Faster filling, high-speed machinery;

2. Dual-purpose equipment capable of using a variety of materials such as glass, package plastics, etc.;

3. Equipment to handle irregular shapes—certainly an important objective for an industry such as this one in which so much original and creative work is being done in packaging design.

Don't miss *Beauty Fashion's* special fragrance issue in June. This is the annual fragrance directory plus special feature articles and fragrance market data.

This year, a bigger, better, more complete fragrance issue.

The issue you will want to keep!

Plough, Inc., is jumping the advertising budget 10 per cent this year, to a record $11 million. The money will be used primarily for "Coppertone" suntan products, St. Joseph Aspirin For Children, Paas Easter egg dyes, the St. Joseph Family Almanac Calendar, and Mexsana medicated powder. Also advertised will be Plough's Quick Tanning lotion.

During the last decade Plough's sales have risen from $16,362,756 to over $46 million.

We understand that popcorn is sometimes used for shipping delicate instruments.

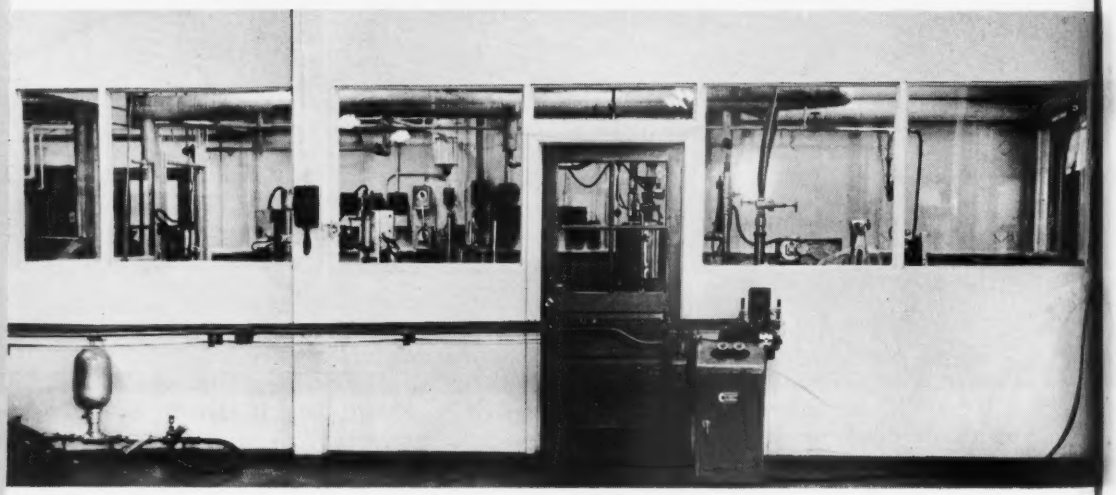
When used as a packaging material as a substitute for excelsior and shredded paper, popcorn is supposed to be chemically treated to make it unpalatable.

This seems to be the wrong approach. When almost everybody is giving away something for nothing to sell goods, why not ship a product in something nice and edible like popcorn?

This ought to open up an entirely new field of research in packaging.

The SPECIALIST does a better job

--in FILLING OPERATIONS, too



Enclosed Filling Line in FLUID'S Main Plant

Ships' officers, doctors and members of similar vocations acquire amazing skills because they *specialize*. This is the case, also, with FLUID CHEMICAL COMPANY, INC. Since 1921 we have specialized in contract packaging.

After the aerosol container was conceived in World War II, our specialization became even more sharply defined. Today we are known principally as liquid and aerosol filling specialists. Our many contributions to the technology of aerosol filling have kept us in the forefront of this rapidly growing industry.

Among the interesting developments we have helped to pioneer is the use of hydrocarbon propellants. Their use has greatly widened the range of products to which aerosol dispensing is applicable. Our main plant includes an aerosol line housed in an explosion-proof building, designed and constructed especially for butane-propane aerosol filling. Every precaution for safety is taken, and methods are the most efficient known to the industry.

Send for further information regarding FLUID'S facilities for serving you. Write or phone Fluid Chemical Company, Inc., 870 Mt. Prospect Ave., Newark, N. J.—HUmboldt 4-1000.

Packaged by

FLUID

Chemical Company, Inc.

MANUFACTURING CHEMISTS SINCE 1921

NEWARK, NEW JERSEY

NEWS IN PACKAGING...

1. Barbara Gould has redesigned the containers for their reformulated lipstick and compact powder. Each container features a nymph and swan motif against a gold finish. The lipstick is encased in black enamel, with a gold flaired base. Criss-crossing arcs create a mesh effect on the compact.

2. Coty's new idea for combining a compact and lipstick is to place the lipstick in the hinge of the compact case. The simulated mother-of-pearl case is made of Dow Chemical's Styron 475, and is manufactured by Morningstar. Designer of Duette was Eric de Kolb.

3. Brylcreem in the Dab dispenser, produced by Beecham Products, is the first of its kind in the men's hair dressing field—a free-piston, aluminum aerosol can which allows for complete separation of product and propellant, and practically 100 per cent usage.

4. Continental Can has designed a nibbed-dome top for aerosol cans to accommodate a single shell metal overcap. This overcap saves packers $4.00 per thousand on the 2⅛ inch diameter overcap and $6.00 per thousand on the 2 11/16 inch diameter overcap.

5. Ar-Ex Products have added a Moisture Lotion to their line of hypo-allergenic beauty aids. It comes in a 2-oz. dewdrop bottle encased in a clear acetate cylinder.

6. Risdon Manufacturing have introduced two sprays in Italy, both using metered valves and actuators made by Solfrene, S.p.A., Milan. Asman-Valeas, oral spray, is in a red plastic-coated glass container, and Neo Rinoleina, the first nasal spray in the country, is in a blue one-piece aluminum container.

7. Pfizer Laboratories' new sample box, designed by Eron and Eron, uses a basic research motif boldly and subtly with three basic geometric shapes in primary colors: red beaker, blue flask, and a yellow retort on white.

8. John H. Breck is using an aerosol package not much larger than a lipstick for its ¾-oz. Love Lace Cologne Mist. The round tube is ⅞ inch in diameter and 3¾ inches tall including a 1 inch gold-finished cap. The name is printed in gold and pink with lace-bordered lettering. Peerless Tube supplies barrels; V.C.A., valve and cap; and Aerosol Techniques is the filler.

9. Pond's has a special offer of Cold Cream and Moisture Base booted together with Stretch Pak on a card featuring a gay, striped foldover awning top.

10. Helena Rubinstein's Heaven Sent fragrance, comes in a new, uncoated glass aerosol container resembling cut glass. Bottle by Foster-Forbes Glass; ribbed, gold-tinted cap, imprinted with angels against a blue background, applied by Pharma Plastics.

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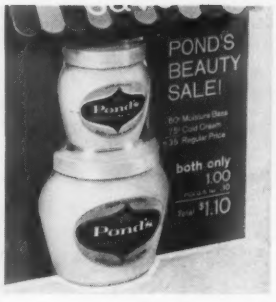

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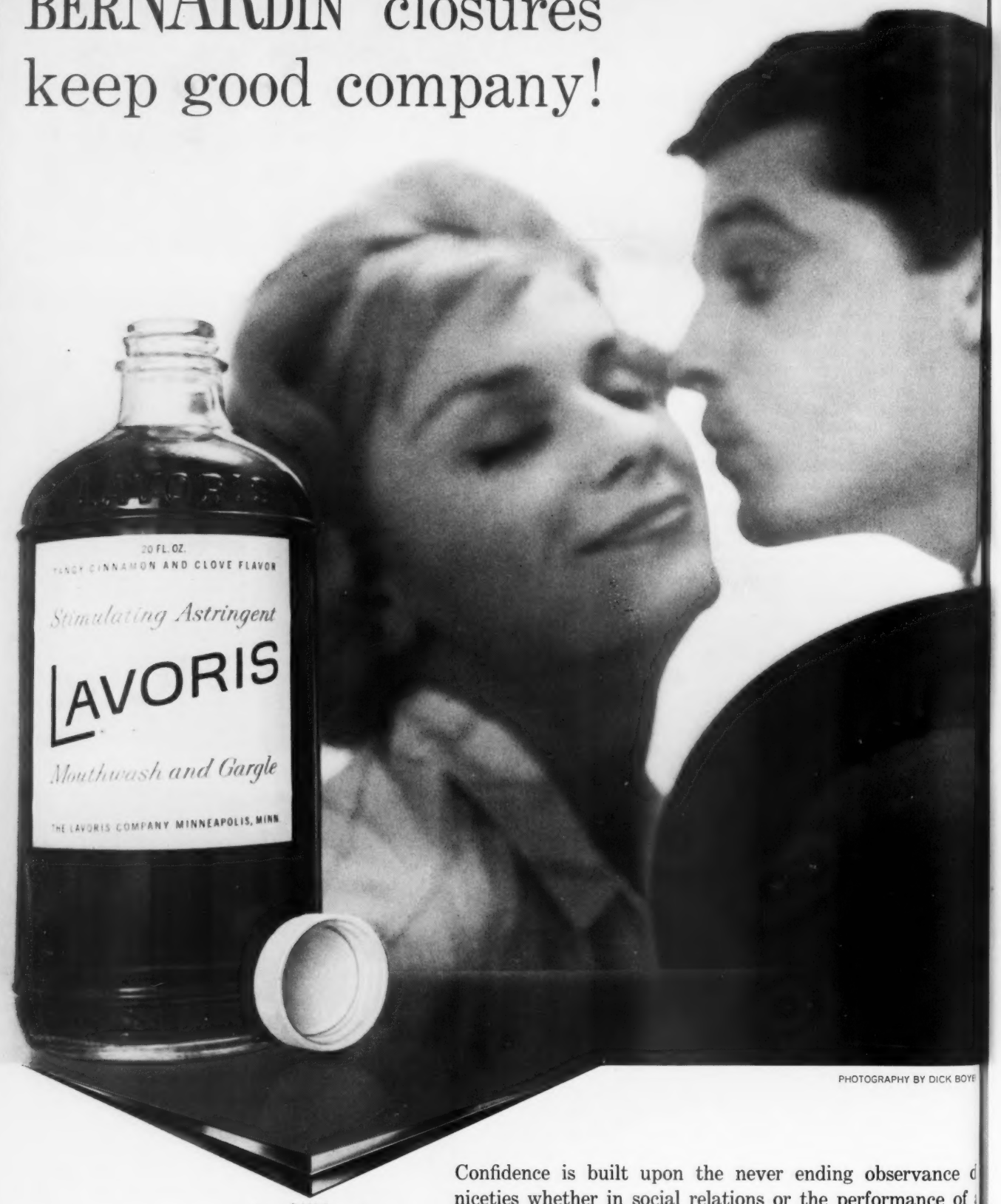
BERNARDIN closures keep good company!



PHOTOGRAPHY BY DICK BOYE

Confidence is built upon the never ending observance o niceties whether in social relations or the performance of closure. Years of service to The Lavoris Company suggest confidence in our closures for the niceties with which they meet production requirements, as well as their ability to reflect to the consumer the prestige of product and maker. *May our Closure Craftsmen work with you?*

SINCE 1881 • BERNARDIN BOTTLE CAP COMPANY, INC., EVANSVILLE, INDIANA

1. Christian Dior's new Eau de Toilette Miss Dior spray in a slender, silver-plated 3-ounce cylinder. The refill spray is a plasticized gray cylinder with a white bow.

2. Sample quantities of ethical drug products for distribution and merchandising directly to physicians, in convenient lightweight slide packs thermoformed from sheets of tough, transparent Eastman Tenite butyrate plastic. The packs shown, used by Chicago Pharmacal, are extruded by Campco, Division of Chicago Molded Products.

3. Max Factor's new nail polish, Nail Satin, in a transparent bottle that is wide-based to prevent tipping, and packaged in a white-and-gold carton decorated with red satin streamers and matching lettering.

4. Allen B. Wrisley has introduced Magnetique Spray Mist Cologne, in a black aerosol 2-ounce spray flacon with accents of gold and white. Its pyramid-like box is in white, black, and gold.

5. Prince Matchabelli's new stick deodorant and antiperspirant, Tact, in a light-weight yellow plastic case with air-tight cap, has been put in a Stretch Pak plastic film package. The counter unit wire rack display holds 12 products on display cards. The transparent plastic film increases impulse sales and keeps the product free from dust, moisture, and shopwear.

6. J. B. Williams, makers of Aqua Velva after shave lotion, have solved their problem of merchandise especially packaged for Christmas by using custom-printed cellophane overwraps that can be stripped off after the holiday. Warren Furlonge Associates designed it, and Milprint flexographically printed the overwrap, in five colors.

7. Palo Laboratory Supplies has a new line of low-cost polyethylene bottles available in sizes from 50 to 2000 cc. The bottles have a wide mouth to facilitate filling and dispensing, and are provided with a leak-proof, tight fitting, interchangeable, polyethylene screw cap that will not freeze up or loosen.

8. Wonder Wave Permanent Wave, previously packaged in a blue and black box with very little feminine appeal, has been replaced with a new design of lighter blue in half-tone waves with black lettering. The designer was Gittleson Studios and the carton supplier, Universal Folding Box.

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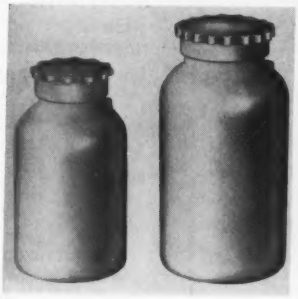
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Packaging for Convenience

Industrial designer, Frank Gianninoto told members of the Birmingham, Ala., Rotary Club that "today's shopper is much more attracted by items that offer comfort and convenience than by those that fill basic needs," and that packages should be designed with that in mind.

Packages Are Handled, Too

May Bender, partner of Lane-Bender, Inc., advised advertising agencies, at a recent meeting of the Association of Advertising Men and Women in the Hotel Biltmore, N. Y. C., to apply "three-dimensional thinking" to their package design work. She feels that too often agency-produced packaged design is affected by the staff artist's habits, which are a result of years of training in advertising media rather than in packaging. "All packages must be thought of in terms of being handled—not just viewed," Mrs. Bender said.

Folding Carton Shipments Decline

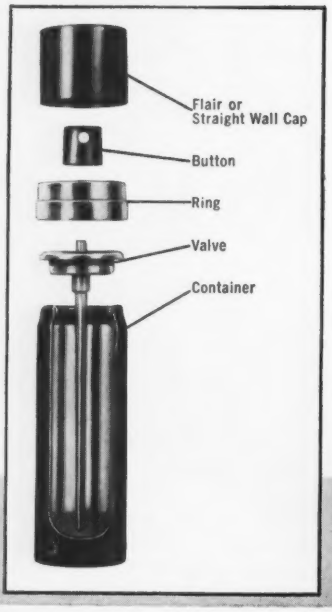
The Folding Paper Box Association of America has announced that shipments of folding cartons in February declined 9 per cent in dollar volume and 8.9 per cent in tonnage, which is attributed partly to the extra working day in February of last year, representing about 5 per cent more production time.

INTRODUCING,

The BRAND NEW, Inexpensive *"PRINCESS"* line of SELF CONTAINED AEROSOLS with the Refillable Look

by MF PACKAGE SPECIALISTS

Now, METAL FAB brings you an easy-to-assemble 5 part unit in 4 popular container sizes; 2 stock design caps—flair or straight wall—that resemble more expensive refillable packages.



This new MF, low cost "PRINCESS" line:

LOOKS LIKE REFILLABLES . . . *BUT ARE NOT!*
LOOKS EXPENSIVE . . . *BUT ARE NOT!*
LOOKS DIFFICULT TO ASSEMBLE . . . *BUT ARE NOT!*
LOOKS COSTLY TO FINISH AND DECORATE . . . *BUT ARE NOT!*
LOOKS LIKE THEY REQUIRE INNER CONTAINERS . . . *BUT DO NOT!*
LOOKS LIKE THEY NEED SPECIAL VALVES . . . *BUT DO NOT!*

Yes, these brand new MF 'exclusives' look identical to refillable packages requiring inner containers. That is where the resemblance ends!

Designed for cosmetics, perfumes and personalized sprays, made with the expensive look . . . limitless sales appeal. Designed to accommodate standard size mounting cups and metered or non-metered valves of your choice.

MF the new symbol of quality, offers you a complete package service: design, fabrication, decoration, finish, caps, bottle closures, flaconetts, perfume funnels, etc.

Phone PLaza 4-4141 *For further information and samples, or write to Dept. AA-4.*

MF **Metal Fabrications** INC.
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National Sales Agents • MONROE-DANFORD & CO. 50 48th St., P.O. Box 807, Weehawken, N.J.

NEWS and VIEWS

BY TED KLEIN PUBLIC RELATIONS DIRECTOR*

DCAT Conference

In early March, the Drug, Chemical and Allied Trades Association held an all-day conference in New York on "New Challenges in Health, Welfare and Business."

One of the speakers was Congressman John E. Fogarty, who talked about the role of government spending in medical research.

The afternoon session consisted of three round-table discussions, one on business, one on research, and one on public welfare. A summary of each follows:

How to Meet Competition at Home and Abroad. The American Drug and Chemical industries are headed for increasing trouble from foreign competition unless they receive proper tariff protection, U. S. Congressman John E. Fogarty stated. He disagreed with some soul-searching on the part of industry members over whether poor management was one of the main factors in today's cost-price squeeze.

Some industry members suggested that perhaps U. S. business was doing too much "committee" decision-making and using a dozen men to do what perhaps one or two men should do. Congressman Fogarty brushed such reasoning aside and pointed to the "cheap" labor employed by foreign competitors as the primary reason for tougher business conditions in the drug industry today.

The congressman told the group that the administration in Washington will listen and will act if the facts so dictate. He alluded to the recent increase in tariffs on bicycles enacted by the new administration.

The discussion period brought out the fact that it requires approximately 20 million dollars to discover and market a new antibiotic, and that a drug company has about five years within which to recuperate such an investment, after which the drug is usually replaced by others.

No drug company can afford to invest that type of money unless it has some assurance that it will regain its investment, so that unless such products can be priced right and not undercut, drug companies will simply not be able to market new products, the group agreed.

Industrial, Academic and Governmental Research — Competitors or Collaborators? The conference on research discussed the general problems of the relationship of governmental, institutional, and industrial research. While no definite answers were reached to the questions raised a number of general conclusions were indicated. First of all, improvements undoubtedly can be made in the use of available research personnel and facilities. There is no competition for money and people between these groups. It appears that more new compounds will continue to come from industry but they will be evaluated by government and universities. There is a definite shortage of scientists to conduct research, but the amount of movement of people between these groups has not reached unhealthy proportions.

Some fears were expressed concerning the pressure on industry from the amount of money provided for government programs. There is the possible beginning of a trend that should be watched closely to see that it does not continue to the point where physicians might ask in using compounds if these were the ones approved by the government.

One suggestion was made for improving the utilization of research facilities—to have less emphasis on university and more on industry research institutions. There may have been some interference with the teaching function of the universities because of the overemphasis on research, since this is a means of obtaining money.

What Is Industry's Responsibility to the Public Welfare? In the estimation of one government scientist, the U. S. drug industry has proved one of the most useful industries to mankind because of its mass production of medications. This statement was made by Dr. George Archambault, Pharmacy Dir., Hospital Div., U. S. Public Health Service. Dr. Archambault also said: "There is no need for government control of the pharmaceutical industry if there is sufficient self-discipline." Henry Hazlett, contributing editor of *Newsweek* stated that "if the government passes legislation to hold down the profits of the drug industry this will restrict research efforts." He said that he thought it appropriate to ask the question "What is good for the public welfare?". The answer, he said, is that "companies should be allowed to make an adequate profit so that they can conduct more research." "The businessman has developed a guilt complex . . . it is not shameful to make a profit."

Nobel Prize Winner, Selman Waksman said that "the universities' responsibility is to open new fields of science. The pharmaceutical industry's responsibility is to apply the results of these discoveries."

Foreign Operations

S. C. Allyn, Chairman of the Board of the National Cash Register Company, recently listed nine principles which his company has found useful in its more than 75 years of conducting business abroad. They were reported in the official publication of the National Planning Association. They are:

- Foreign operations should be established "for keeps," and never withdrawn voluntarily.
- Part of the profits should be consistently invested in the countries in which they were earned.
- Overseas employees should not be treated as "stepchildren."
- The foreign market should get the product it wants, not the product the company thinks it ought to have.
- Maintenance comes ahead of sales.
- Company operation overseas is preferable to general agencies.
- Firsthand contacts with foreign markets are of paramount importance.
- Extreme care should be taken to respect the local customs, traditions, religions, and sensitivities.

ORC Findings

The Opinion Research Corporation of Princeton, N. J., recently reported that one of their studies of brand images revealed that "A cigarette manufacturer used brand image research to evaluate an ongoing advertising campaign, diagnose what was wrong with the campaign and find ways of strengthening it. Among other things, it was found that the advertising actually discouraged use of the brand it attempted to promote."

*Paul Klemtner & Company, Inc.

Exceptional printing makes the difference — helps make the sale!

Advanced Printing and Decorating Techniques

Most Complete Line of Rigid Plastic Containers

LERMER plastic rigid containers are:

- Beautiful—printed or decorated up to four colors on crystal clear or transparent and opaque colors
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- Lightweight, shatterproof—with rigid wall for protection
- 1/5 the weight of glass
- Also available unprinted

Write for full color catalog and samples.

Lermer Plastics, Inc. 506 South Avenue Garwood, New Jersey

PIONEERS AND SPECIALISTS IN PLASTIC CONTAINERS SINCE 1919

Patents and Trademarks

BY THOMAS CIFELLI, JR., PATENT ATTORNEY*

The "New Frontier" Is Not New in Patent System

With a "New Frontier" administration in Washington, it is fashionable—and in some cases rewarding—for different segments in the economy to attempt to identify themselves with the New Frontier concept. An example where this effort has taken widespread effect is the women's fashion field, which apparently sees big things ahead in emulating the coiffure and dress of the new First Lady. The fact that the exact meaning of what the New Frontier may be is far from clear at this time does not deter those who seek identification with it. It therefore appears in order to consider whether the patent system can identify itself with the governing political philosophy covered by the term, New Frontier.

When this is done it is found that a strong case could be made that the patent system is not only in complete accord with the New Frontier, in a sense, but that in fact the latter is really a Johnny-come-lately in concept. Of course, many will take strong issue with any assertion of a connection between the patent system and the present political regime in this country; but we wish to be fashionable now and shall, therefore, ignore them. On the other hand, we probably have been wrong in saying that there is a real difference of opinion on this score, if we can accept as the definition for the New Frontier its active effort to improve the status of people everywhere. This is just what lies at the foundation of our patent system. The latter attempts to stir creative persons to do things which will benefit mankind. Of course, patentees probably are also benefited; but so also are exponents of any movement when that movement is in power.

Three recently issued U. S. patents are believed to illustrate this New Frontier concept of patents. These patents do not confine themselves merely with improvements and new products; they all involve a break in the old concept of doing things and pioneer in new approaches.

The first of the patents in question is U. S. 2,964,560, issued to C. F. Boehringer & Soehne, a German corporation. The patent deals with orally effective compounds for treating diabetes.

As is well known, the treatment of human diabetes involves dietary restriction and parenteral administration of insulin. Attempts to replace insulin by an orally effective antidiabetic agent were often unsuccessful because of the unreliable activity of such agents, or because of the toxic side effects encountered in their administration. A clinically useful orally effective antidiabetic agent must combine low toxicity—especially with regard to liver, adrenal glands, and the central nervous system—with highly reliable antidiabetic action. Also, the agent must not exert an intense, shock-like effect, but must provide a sustained antidiabetic effect at a satisfactory level so that danger is avoided.

The German inventors found that certain benzene sulfonyl urea compounds are useful agents for this purpose. These may be referred to as the N_1-(toluene sulfonyl)-N_2-(lower alkoxy lower alkyl) ureas.

Interestingly, the fact that the compounds do not possess bacteriostatic action comparable to that of the sulfanilamides is said to be an advantage. This is so because the lack of bacteriostatic activity results in the intestinal flora not being affected by the compounds, thereby reducing the danger that pathogenic germs might become resistant to sulfanilamide when using the compounds continuously.

A preferred initial clinical dose given orally to patients is between about 2.0 and 6.0 grams of the sulfonyl urea compound. As soon as a satisfactory blood sugar level is obtained, such a level is maintained by administering a single dose of between 0.2 and 3.0 grams per day, or, if desired, subdivided into 4 separate doses of 0.2 grams to 0.75 grams per dose. Variations in dosage, at the discretion of the physician, are permissible.

The second patent involving a new approach to the solution of an existing problem is U. S. 2,965,542, issued to a Frenchman, Albert Castaigne. This patent deals with a pharmaceutical product for reducing the proportion of cholesterol in the blood.

The patent points out that present thinking is that a large part of the arterial maladies leading to such heart troubles as infarction of the myocardium, and cerebral hemorrhages are due to an excess of lipides, and especially to cholesterol in the blood. Avoidance of these difficulties or treatment of them involves the use of dietary regimes. Indeed, it is a rare person who is not aware of claims that unsaturated oils and fats are safer than the saturated variety.

The French inventor tackled the problem by looking for something to reduce the excess of lipides in the blood, and especially to reduce the proportion of cholesterol. He found that a mixture of certain racemic amino acids did the trick. These are alanine, isoleucine, valine, serine, and glycine.

Castaigne first established, by *in vitro* and *in vivo* tests, that protamine sulfate had a clarifying power on the blood serum and a certain desirable action on the lipide metabolism. The use of protamine sulfate as an anticholesterol, however, is not advisable, according to the inventor. This is so because it can only be administered intravenously, the intramuscular method being painful and the substance being ineffective when administered orally. Also, intravenous administration of protamine in the required doses involves the danger of anaphylactic shocks. Castaigne then determined that the entire protamine molecule was not necessary for the desired results and that the aforementioned amino acid components brought about these results

*Richards and Cifelli, Newark 2, New Jersey.

Ucon®
propellants

UNION CARBIDE

UNION CARBIDE CHEMICALS COMPANY
Division of Union Carbide Corporation
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without attendant and anaphylactic accidents.

The composition that has proved to be the most satisfactory under point of view of perfect tolerance by patients and to have the most consistent effect on the lipide metabolism and on the difficulties which accompany imbalances of this metabolism is given below:

	By Weight mg.	Percentage
Alpha amino propionic acid (Alanine)	335	6.7
Alpha amino acetic acid (glycine)	1,100	22.0
Alpha amino beta methyl valerianic acid (Isoleucine)	1,450	29.0
Alpha amino isovalerianic acid (Valine)	1,730	34.6
Alpha amino beta hydroxypropionic acid (Serine)	385	7.7
	5,000	100.0

The results obtained by subjecting 15 patients to intravenous injections of 5 cc. of a 2 per cent saline solution product are shown in the following table:

HUMAN CLINICAL TESTS

	Numbers of Injections	Number of Days	Cholesterol Before, g.	Cholesterol After, g.	Decrease Total, g.	Decrease Percent
(1)	5	7	3.88	2.70	1.18	+30
(2)	5	8	3.76	1.22	1.54	+41
(3)	5	7	4.10	2.83	1.27	+31
(4)	5	7	3.79	2.20	1.59	+41
(5)	5	10	3.75	2.46	1.29	+34
(6)	5	10	3.38	1.90	1.48	+43
(7)	4	7	3.42	3.20	0.22	+6
(8)	6	12	3.28	1.61	1.67	+51
(9)	6	12	3.20	3.30	—0.10	−3
(10)	6	12	3.28	2.04	1.24	+37
(11)	6	12	4.30	2.80	1.50	+34
(12)	6	12	3.16	2.64	0.52	+16
(13)	6	12	3.05	2.01	1.04	+34
(14)	6	12	3.08	2.50	0.58	+18
(15)	5	7	3.77	2.49	1.28	+34

"In another group of clinical tests on 38 patients treated intravenously with an average of 5 to 6 injections of 2 per cent strength, the results were as follows:

"The average amount of cholesterol decreased from 4.32 g. before treatment to 2.14 g. after treatment, for a total drop of 1.81 g. and by per cent a drop of 41.9 per cent. In another group of patients treated orally the average percentage of cholesterol went from 3.58 g. before treatment to 2.14 g. after treatment, for a total decrease of 1.44 g. and by percentage an average drop of 40 per cent."

Castaigne followed for more than six months the progress of a number of patients who underwent the treatment just described. This enabled him to make the following observations:

"(1) In certain patients in which the percentage of cholesterol had been brought down to nearly normal figures this percentage remained normal several months after the termination of the treatment.

"(2) In other patients this percentage rose gradually, at about .20 g. per month.

"(3) In still other patients the percentage of cholesterol returned rapidly to its original figure (in between 1 and 2 months).

"(4) When such an increase occurred, the percentage of cholesterol remained responsive to this treatment and could be controlled by the periodic oral administration of the medicament constituting my invention."

The last of the three patents exhibiting the old, New Frontier approach is U. S. 2,970,083, assigned to Chesebrough-Pond's. The patent deals with a two-phase deodorant-antiperspirant stick. As the patent points out, modern solid colognes generally comprise solidified compositions of alcohol, soap, and perfume oil, with minor amounts of polyhydric alcohols and water, and are designed to be applied to the surface of the skin by rubbing. The solid colognes use, as their gelling ingredient, a soap such as sodium stearate. The soap is incorporated as such into the liquid cologne mixture from which the solid stick is made, or is formed in the mixture by reacting stearic acid with sodium hydroxide solution.

In solid cologne it is important that a large portion of alcohol, for example 80 or 90 per cent, be present to give the cologne such desirable characteristics as ease of application and cooling, refreshing, and quick-drying effect. The products prepared with a small amount of alcohol are undesirable since they lack these characteristics. Solid cologne can also be given deodorizing properties by the addition of a soap-compatible skin antiseptic such as, for example, hexachlorophene, bithionol and 3, 4, 4-trichlorocarbanilide.

Since it is also desirable to impart antiperspirant properties with a solid cologne deodorant stick, astringent salts such as aluminum salts are generally added for this purpose. However, an insoluble aluminum soap is formed, and the product will not solidify in the desired gel form. While certain soap-compatible aluminum salts can be used to avoid this insoluble soap formation, the alcohol content that can be employed with such salts is considerably below that desired in high quality modern solid colognes. Also, antiperspirant cologne sticks containing soap-compatible, stable complex aluminum salts can become discolored after a few months due to the action of the complex salts on the perfume ingredients. Then too, such sticks cannot be wrapped in unprotected aluminum foil because of corrosive attack by the complex aluminum salts.

Bell, the inventor, solved the problem by providing an unperfumed antiperspirant cologne stick comprising soap-solidified alcohol and including the soap-compatible, complex aluminum salt, as a core, the core being surrounded with a larger deodorant cologne stick body comprising soap-solidified alcohol and including the deodorant antiseptic in perfume.

In the words of the patent:

"By using the unperfumed antiperspirant cologne stick as the core of a larger deodorant cologne stick, the proportions of soap-compatible complex aluminum salt, alcohol, soap, water and polyhydric alcohol can be adjusted for optimum stability, physical appearance and antiperspirant effect without regard to application properties because the application properties of the stick are essentially those of the cologne stick body and not of the antiperspirant

(*Continued on page 529*)

THE LADY PREFERS

. . . glass containers that compliment her good taste every time she uses the product. Here is a modern classic in a stock design. Its very simplicity gives it an elegant, luxurious air . . . an air that spurs impulse sales.

Available in a wide range of popular sizes . . . clear, frosted, or sprayed in ceramic color . . . undecorated or with applied ceramic label.

Specify Design #100 . . . prove to yourself that glass stimulates sales.

CARR-LOWREY GLASS CO.

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FACTORY & MAIN OFFICE: BALTIMORE 3, MD.
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for repeat sales

COMPLEMENT BOTTLE BEAUTY

with this RISDON aerosol valve's

BEAUTIFUL SPRAY PERFORMANCE

* Wider cone, finer, drier spray cloud and longer lasting contents promote customer satisfaction and brand loyalty.

* Applicable to both 2-phase and 3-phase spray products in either coated or uncoated glass, plastic or metal containers. Special actuator design gives top quality performance on virtually any pressurized product including ultra-low pressure products, water-base products and products not soluble in propellant.

* Permits greater formulation latitude – minimizes propellant – facilitates elimination of dilution effects on fragrance or other qualities of product.

* No metal in contact with contents – No spring – Instant "on-off" action. Vertical or Horizontal spray. Also available with foam actuator.

* Available with custom-designed metal or plastic caps.

contact Risdon for further details and free operating samples . . .

RISDON

THE RISDON MANUFACTURING CO.

(*Continued from page 435*)

for doctors in California, Oregon and Washington, made its bow in the fall of 1959.

- Hoffmann-La Roche launched *Image*, a quarterly.
- *Factor*, a 16-page tabloid covering developments in the field of psychiatry, was launched in December, 1959, by Professional News Bureau, New York, as the first independent newspaper in the medical field.
- *Applied Therapeutics* was introduced in January, 1960, as was the *Journal of Nuclear Medicine*.
- *Medical World News*, a fortnightly, was launched in April, 1960, with Dr. Morris Fishbein as editor.
- *Medical Tribune*, a 32-page weekly newspaper, was launched, with plans to become a daily sometime in 1961.
- *Medical Legal Digest* published its first issue in May, 1960.
- *Modern Medicine* revised its format and moved up its publishing frequency from 24 to 26 times a year.
- *Pediatric Herald*, a monthly sponsored by Pfizer, Wyeth and Gerber Products, was introduced in July, 1960.
- *Family Physician*, a new monthly of the American Academy of General Practice, is scheduled to make its bow in April, 1961.

Not all of these new publications have made the grade, of course. *Medical Legal Digest* folded in less than a year. *Factor* has just folded. As a matter of fact, the past six months, coinciding with a sharp downturn in sales for many drug houses, have brought some agonizing reappraisals by manufacturers of their promotional programs. The most drastic steps were taken last November by Upjohn and Ciba. Although Upjohn's *Scope* and Ciba's *Medical News* had both achieved strong identification among physicians during the previous five years, the two companies decided almost simultaneously to discontinue their captive newspapers. For Upjohn, it meant a savings of more than $1,000,000 a year; for Ciba, it meant a savings of more than $600,000. Significantly, *Scope* and *Medical News* were shuttered shortly after the launching of two new publications set up to cover medical news developments for doctors. These were *Medical Tribune*, a weekly, and *Medical World News*, a bi-weekly—both launched in early 1960. Ciba referred to these in explaining its decision. Paul Roder, marketing vice-president of Ciba, said: "The competition has become very severe."

Mr. Roder added that Ciba had made a study of the situation and reached the conclusion that "to compete with other medical newspapers, *Medical News* would have to become a *weekly* publication." And it didn't take Ciba long to decide then that it "should not allocate the necessary funds from its promotion budget to accomplish this." However, the editorial

(*Continued on page 472*)

Eye Catching Applicator Bottles

designed for
the new liquid
eye liner products

1 and 2 drams complete with brush applicator

Our famous EXQUISITE bottle
with matching FUTURA caps.

AVAILABLE FROM STOCK

Write for Samples and Prices.

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Guatemala City, C. A.

M. LUIS M. LANDECKER
Representaciones "Noris"
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MR. LAMBERT G. SNOW
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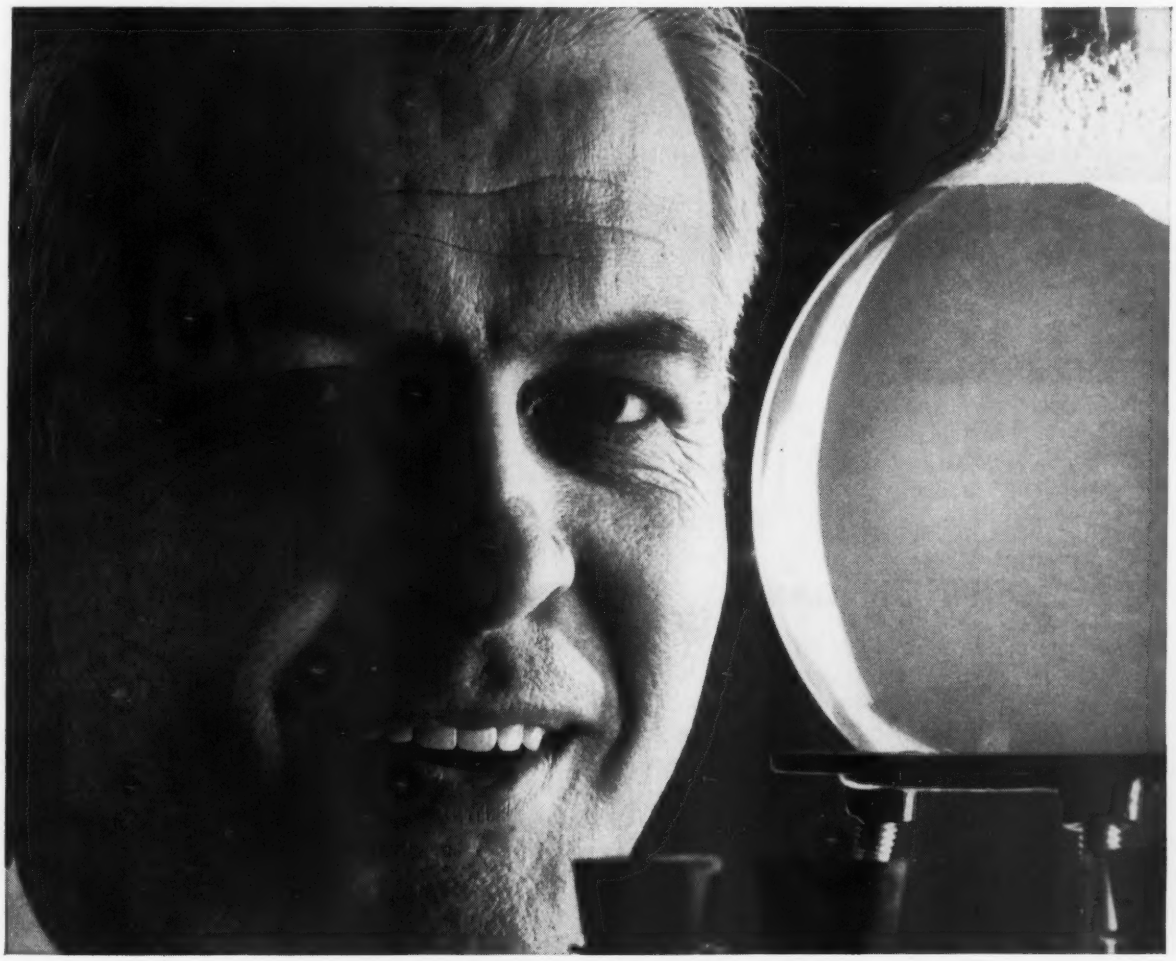
Johannesburg, South Africa

Formulate your anti-perspirants with this unique chemical



Because of the difference between CHLORHYDROL® and the normal aluminum salts, Reheis offers aid in its use for formulation of anti-perspirants and other external body preparations.

This unique basic ingredient is much less acid, and has a considerably higher aluminum content. It is non-destructive to fabrics or perfuming agents. No buffering is needed, as its pH closely approximates the lower limit of the normal pH of the skin.

CHLORHYDROL is available in *five* different forms to suit the exact needs of your cream, lotion, spray or powder formulas: granular, fine, medium, impalpable, and 50% w/w solution, *in any quantity from stock.*

For stick deodorants, there is CHLORACEL®, a 40% w/w solution or powder for alcoholic sticks.

Our laboratories have prepared formulations as a guide for individual manufacturers in making their own products. Write for descriptive bulletin, or about any problem.

Manufacturers of fine chemicals and biologicals

REHEIS COMPANY, INC.
Main Office, Research Laboratories and Plant
Berkeley Heights, New Jersey
Other plants:
Stamford, Connecticut • Passo Fundo, Brazil • Montevideo, Uruguay

4223

KNAPP FINE CHEMICALS PRODUCTS INC.
LODI, NEW JERSEY

- EMULSIFIERS
- DETERGENTS
- ABSORPTION BASES
- FRAGRANCES

- SCIENTIFICALLY DEVELOPED AND MANUFACTURED— SPECIFICALLY FOR APPLICATION IN COSMETIC FORMULATIONS

KNAPP FINE CHEMICALS PRODUCTS INC.
LODI, NEW JERSEY

(*Continued from page 470*)

unit that had been producing *Medical News* for Ciba decided that it would like to take a fling at converting the paper into an independent publication, open to advertising from all drug companies. Ciba agreed to sell the publication name to editor Blake Cabot, who announced that *Medical News* would re-appear as an independent weekly early in 1961.

No sooner had Upjohn and Ciba killed their newspapers than a third company, Smith, Kline & Laboratories, announced a step in the opposite direction. SK&F said that in the spring of 1961 it would begin mailing doctors a monthly magazine containing "easy-to-read, down-to-earth" articles on medical subjects. Burdick & Becker, a New York advertising agency, was retained to produce the monthly. SK&F explained that it considered this magazine an excellent "service-oriented selling" addition to its advertising program. It conceded that it would have to reduce "slightly" its advertising in medical journals and direct mail to offset the initial cost of publication.

So what do we have here? Two companies discontinue publications while a third starts one. It seems clear that there is no pat formula to this business of reaching doctors with the message. For Ciba and Upjohn, a captive publication had become a stale device. For SK&F, it represents a fresh breakthrough. The point, if there is one, seems to be that there is such a conglomeration of media in medical communications that companies must strive to be *different* to make themselves heard above the din. SK&F's new publication will be different. Upjohn's and Ciba's were old and familiar.

The fickleness of the ethical drug ad dollar was recognized even by the American Medical Association at a recent clinical meeting attended by some 5,000 doctors in Washington, D. C. It was suggested then—by AMA officials—that the AMA dues be hiked substantially so that the association would have a more reliable source of income than advertising. The AMA bigwigs pointed out—and these figures surprised many—that the association now derives $9,000,000 of its $16,000,000 annual budget from pharmaceutical advertising in AMA publications.

Meanwhile, the search for new media goes on. Radio Corp. of America has been fooling around for nearly two years with an fm multiplex system that would deliver music to physicians' reception rooms, bringing the doctor special medical programs sponsored by pharmaceutical houses. Perhaps the most daring approach to this problem was Ciba's ill-fated experiment with an open-circuit television program. Ciba tested this idea in four cities, putting on a medical program for physicians during off-peak hours, spicing the editorial format with commercials for its prescription products. The program was designed to be technical enough to discourage all but doctors from tuning in. Ciba was so pleased with the results that last summer it placed an order with the National

(*Continued on page 487*)

DAVID J. SMITH

JOHN M. HALSTED

HARRY W. McNEY

FRANK N. GETMAN

NEWS...

Appointments and Promotions

The former director of sales and a director of Revlon International Companies, **David J. Smith, Jr.,** has joined the International Division of Chesebrough-Pond's, Inc., as vice-president in charge of European operations. Mr. Smith will operate from Geneva, Switzerland.

John M. Halsted, with Colgate-Palmolive Company since 1927, has been elected vice-president for purchasing. He succeeds John H. Blakney who has retired after 47 years with the company. **Dr. Richard E. Farrar** has been appointed to the newly created position of manager, research coordination for Colgate-Palmolive's Household Products Division. With the company since 1951 Dr. Farrar was previously manager of the Liquid Products Area.

Harry W. McNey, director of marketing for Lederle Laboratories Division, American Cyanamid Company, has been appointed executive vice-president of McNeil Laboratories, Inc.

Frank N. Getman, president and general manager of Wm. S. Merrell Company, has been named executive vice-president of Richardson-Merrell Inc. He has been with the company since 1937.

The Risdon Manufacturing Company has promoted five officers and elected two new directors. **Lewis A. Dibble,** president, and with the company 47 years, has been elected chairman of the board and chief executive officer. Succeeding him as president is **Lewis A. Dibble, Jr.,** executive vice-president, who has been with the company 15 years. **Harold W. Turnblom,** assistant treasurer, has been elected treasurer and **Roger G. Goodeve,** assistant secretary, was named secretary. Both positions were held for over 20 years by **Harold P. Baldwin,** who has recently retired. Mr. Baldwin continues as a director of the firm. **Carroll E. Retallick** becomes assistant treasurer. Newly elected Risdon directors are **Donald W. Henry,** and **Edward G. R. Whitcraft.**

Thomas M. Rauch, vice-president of the marketing division of Smith, Kline & French Laboratories, has been named a director of the firm. Mr. Rauch has been with SK&F 15 years.

Fred J. Kirchmeyer, Dr. Arthur W. Weston, and **Dr. George R. Hazel** have been elected new vice-presidents of Abbott Laboratories. Mr. Kirchmeyer, who will head commercial development, has been with Abbott since 1949. He continues to direct the new products division. Dr. Weston, with Abbott since 1940, continues to serve as chairman of the research planning committee. Dr. Hazel, a 25-year veteran with the company, will continue to direct the medical division and its clinical studies. In the Scientific Divisions at Abbott, **Dr. Edward J. Matson** has been named director of technologic development, and **Leroy W. Clemence** director of scientific services. Dr. Matson, with the company since 1939, continues to direct activities in radio-pharmaceuticals. Mr. Clemence will coordinate budgets and be responsible for building operations, statistical and central services and all personnel matters within the Scientific Divisions. He has been with Abbott since 1926.

Pharmacraft Laboratories has promoted **Mauri Edwards** to vice-president in charge of marketing. In filling the new position, Mr. Edwards, formerly vice-president in charge of sales, will now be in charge of advertising and promotion as well.

Dean P. Fite has been elected vice-president and comptroller of Procter & Gamble. He joined the company in 1937.

The Board of Directors of Beauty Counselors, Inc., have elected four new officers: **Maison G. deNavarre,** vice-president in charge of research and development; **George A. Hagan,** vice-president in charge of operations; **James G. Miller,** assistant vice-president in charge of purchasing; and **Harry P. Walker,** treasurer.

Charles K. Piercy has been made director of marketing for the Lederle Laboratories Division, American Cyanamid Company, replacing **Harry W. McNey,** who has joined McNeil Laboratories. **Robert H. Hensel,** assistant sales manager will replace Mr. Piercy as sales manager. Four new salesmen have been added to the staff of American Cyanamid's Surgical Products Division. They are **Clifford M. Eppard, Jr.,** who will cover the San Francisco Bay area; **Eugene R. Glickert,** St. Louis area; **Michael J. Mitton,** and **James A. Slear, Jr.,** metropolitan New York area.

Dr. Robert E. Staples has been named section head, department of endocrinology, the Wm. S. Merrill Company, division of Richardson-Merrell Inc. Dr. Staples has recently completed the requirements for his Ph.D. degree at Cornell University, specializing in mammalian endocrinology.

Jack Kaltman has been appointed general manager of the Flexible Packaging Division of Equitable Paper Bag Company, Inc. He was formerly eastern sales manager of Visking Company, division of Union Carbide Corporation.

one of the foremost originators of perfumes and flavors

announces the appointment of

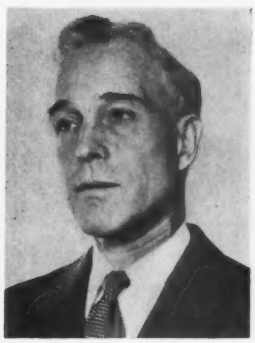
as its exclusive U.S. sales agents

Let SLUYS Perfume and Flavor Engineers solve your marketing and production problems. Samples furnished on request. Write today for FREE catalog.

D. J. OLSEN

JAMES E. McDAVID

HAROLD L. JANOVSKY



GEORGE C. RAYNER

The new general manager of manufacturing for Lehn & Fink Products Corporation is **D. J. Olsen,** who replaces **Edmund J. Dempsey.** Mr. Dempsey has retired. Mr. Olsen, previously with Merck & Company, joined Lehn & Fink in 1959. Two new appointments have been made in the company's new products department. **Bruce K. Cokeley** has replaced **Robert Varian** as new products coordinator, and **Lawrence J. Lynch** has become market research coordinator, a newly created position. Mr. Cokeley, formerly with Bristol-Myers Products Division, joined Lehn & Fink in 1960. Mr. Lynch has had over ten years of market research experience with Mogul Williams & Saylor, Inc., and Marion Harper Associates.

Dr. James E. McDavid, with Cutter Laboratories since 1955, has been appointed director of pharmaceutical research. Dr. McDavid was formerly associate professor at the University of New Mexico.

Harold L. Janovsky, who has been head of the Flavor Laboratories of Fritzsche Brothers, Inc., has joined the Florasynth Laboratories, Inc., as technical director, operating from the New York offices. Mr. Janovsky has spent 27 years in the industry, and has contributed especially in flavorings and specialties.

George C. Rayner has been appointed assistant to the president of Allied Chemical's General Chemical Division, where he has been for 30 years. Mr. Rayner will direct special projects, including economic reports and the coordination of proposals for government and industrial contracts. He will also continue supervision of the division's safety program.

Formerly the Schrader Division planning manager, **Frederik R. Starr,** has been appointed administrative manager of Schrader-Scovill International Division of Scovill Manufacturing Company, Inc. **Frank Fernandez,** formerly managing director of Valvulas Schrader do Brasil, has become technical manager of the division. **Russell C. Flood** has been appointed general manager. Mr. Flood, a vice-president of Scovill, formerly was general operations manager of the company's Schrader division.

Jean-Claude Roussel, head of a number of French pharmaceutical companies known as Les Laboratoires Roussel, and director of U.C.L.A.F., Paris, has assumed the chairmanship and presidency of Roussel Corporation. **Marcel Vaudin** is now executive vice-president, and **Dr. Andre L. Courtin,** vice-president.

Four new personnel appointments have been made in the recently formed Medicinal Division of Mallinckrodt Chemical Works. **Thomas C. Boersig,** previously assistant to the director of market research, medicinal, is now manager of marketing research. **George DeLaMater,** formerly director of organic research, is director of chemical research. Floyd P. Hallett, formerly assistant director, is director of product development. Melvin A. Thorp has been appointed director of product planning. He was formerly director of product development.

John Accardi is the new director of quality control for Syntex Laboratories, Inc. Before joining Syntex, Mr. Accardi was with Schering Corporation for 11 years as a research and development chemist and as an analytical development chemist. **Maria Vidal** has been appointed pharmaceutical researcher. Miss Vidal was formerly a laboratory assistant at the University of Santo Tomas, Manila, Philippine Islands.

Hal Denis is now assistant sales manager of Warren-Teed Products Company. Mr. Denis was formerly with Chas. Pfizer & Co., Inc.

FREDERIK R. STARR

FRANK FERNANDEZ

RUSSELL C. FLOOD

JEAN-CLAUDE ROUSSEL

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Most aerosol perfume compounds are suitable for a very limited number of end products.

Here, however, is one almost universally suitable perfume

Bouquet for Aerosol S7746

$7.00 lb.

a fresh light fragrance with citrus overtones

Excellent in

Room sprays
Hair sprays
Personal deodorants
Suntan preparations
Shaving cream
Colognes

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newburgh, new york

JACQUES MAISONDIEU

ARNOLD LADA

JOHN C. FINDLAN

CHESTER KOTECKI

Jacques Maisondieu has recently joined Charabot & Cie. in Grasse, France. Mr. Maisondieu had served for many years as general sales manager with Etablissements Chiris, in Grasse.

Dr. Arnold Lada has been appointed district manager of the New York Metropolitan area for Onyx Chemical Corporation. Dr. Lada was previously technical services director of the company. **John C. Findlan** has joined Onyx as sales development director. He was formerly sales manager of Geigy's Industrial Chemical Division.

Standard Molding and Cap Company has appointed **Chester Kotecki,** engineer in design, tooling, and automatic molding, as vice-president and general manager. He will be directly responsible for design, construction and production of new proprietary items.

Richard D. Wood has been named general manager of Lilly operations in Argentina and vice-president of the Lilly subsidiaries there—Eli Lilly and company of Argentina, Inc., and L.A.D.A., both located in Buenos Aires. Succeeding him as manager of Eli Lilly International Corporation's market research department is **William G. Davis, Jr.,** Mr. Wood joined Lilly in 1950, Mr. Davis, in 1957. **Robert M. Smith,** manager of the facilities planning department for ten years, has been named to a new post of assistant director of corporate facilities planning. **Max M. Marsh,** head of Lilly's analytical research department since 1956, has been named a control associate. Mr. Marsh developed many of the methods being used in Lilly's vitamin testing laboratories and has established several methods for automatic analysis of amino acids, cholesterol, and other materials. He was instrumental in developing a unique method for the determination of diethylstilbestrol in pharmaceuticals. The company has promoted **Irving S. Johnson, Ph.D.,** to research associate for his outstanding contributions to research. Dr. Johnson joined Lilly as a bacteriologist in 1953. **Dr. Gin-chi Chiu,** and **Dr. J. Gabriel Evans** have been named senior physicians. Dr. Chiu, who had primary responsibility for clinical investigation of the effect of nicotinic acid and its analogues on blood cholesterol, has also been investigating sitosterol and the thyroxin analogues. He has been with the company since 1952. Dr. Evans, a native of Guatemala, has been responsible for arranging clinical studies of agents active in tuberculosis and tropical diseases. In 1951 he left his private practice in tuberculosis in Guatemala City to accept a position as a physician with Lilly.

Roche Laboratories, a division of Hoffman-La Roche, Inc., has appointed **William J. Collier** and **John H. Kelly** as product sales managers. Mr. Collier has been with the company since 1952. Mr. Kelly, formerly with the Upjohn Company, joined Hoffmann-La Roche in 1953. **Robert E. Devanna** has been appointed product advertising manager. He joined the company as sales representative in 1951.

The Strasenburgh Laboratories Division of Wallace & Tiernan Inc. has named **Robert T. Conner, Ph.D.,** director of research. Dr. Conner was formerly director of research and development laboratories for Smith, Kline & French Laboratories.

Newly appointed director of sales for Lakeside Laboratories, Inc., is **Remo Farias.** Prior to filling this newly created position, Mr. Farias was general sales manager for Armour Pharmaceutical Company. Four members of the research department have been promoted: **Dr. John H. Biel,** with the company 13 years, is now associate director of research. **Dr. Claude Judd,** with the research staff for two years, is now chief of the medicinal chemistry division. **Alvin Conway** has been promoted to a section chief in the pharmacology division, and **Dr. Jerry Robertson** has been appointed section chief in the chemistry division of Armor.

Dr. Paolo Marchini has become senior organic chemist with the medicinal chemistry section of the research division of The S. E. Massengill Company. Born in Rome, Italy, Dr. Marchini taught at the University of Rome and did post-doctoral work at the University of Laval in Quebec, Canada and the University of Virginia.

Sterling Drug Inc. has appointed **Dr. David W. Wylie** assistant director of the department of new product development. Dr. Wylie joined the company in 1956 as a pharmacologist.

The Reheis Company, Inc., has named two general managers in its glandular extraction plants in South America. Replacing **Mario Giorello Garrara,** who had been in charge of all Reheis operations in South America until his recent resignation, is **Romulo Ferreira Apolo,** now heading the Montevideo unit, and **Luiz Ricci Vieira** heading the Passo Fundo plant.

Howard L. Burpo, Jr., has been appointed regional manager in the mid-western sales region of Union Carbide Plastics Company, Division of Union Carbide Corporation, replacing P. W. Wood, who has become product manager, polyethylene. Mr. Burpo joined Union Carbide in 1945.

*Once in a blue moon a really fragrant synthetic arrives— Lilial**—*Givaudan's contribution to floral naturalness! Lilial*—a pure aldehyde with an intense and diffusive note that recalls linden blossoms, with the emphasis on fragrance, represents a new high for synthetics in perfume elegance.

Lilial has remarkable tenacity and lends unmatched floralcy, intimate warmth and unique naturalness to almost any composition. On a perfume blotter it lingers for more than a month.

Unusually stable in soap, *Lilial* is long-lasting and diffusive. It is available in quantity—at a moderate price. No one synthetic has ever presented more desirable qualities to the perfumer.

Samples and technical data are available upon request.

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CLEMENT H. NICHOLS

ROBERT B. RICHARDS

ROCCO L. LOCANTORE

GRAHAM J. ROSS

Clement H. Nichols has been named manager of the technical engineering department by Antara Chemicals, a division of General Aniline & Film Corporation. He joined the company in 1957 and was previously manager of the process engineering department. **Dr. Robert C. Wilson,** with the company since 1941, has been appointed manager of the technical research department.

Robert B. Richards has joined the sales-engineering staff of the Walter Frank Organization. He was formerly promotion manager for Omaha Flour Mills.

Fluid Chemical Company, Inc., has appointed **Rocco L. Locantore** sales manager. He joined Fluid Chemical Company in 1956 after six years with Christy Chemical Corporation.

Graham J. Ross, newly appointed manager of the Chicago sales office of Pneumatic Scale Corporation, Ltd., joined the company in 1950 as a sales trainee.

Walter J. Hood has been named regional manager of Patterson-Kelley's Process Equipment Division, to direct the sale of process heat exchangers and process equipment from the new divisional sales office in Clifton, N. J. **Harry W. Donaghy,** district manager, and **Robert Reilly,** sales engineer, have moved from the company's New York sales office to the Clifton office. The Plumbing and Heating, Air Conditioning Division remains at the New York City office.

Three appointments to General Electric's silicone products department have been made. **John H. Blomshield,** with GE since 1949 as a process design engineer, has been named manager of facilities design and construction. **Donald C. Kuhre,** formerly a traveling auditor in the auditing department, is now manager, general accounting. **Thomas H. Fitzgerald,** a sales representative for seven years, succeeds **K. J. Morray** as sales manager of the east central district with headquarters in Cleveland, Ohio.

Dr. C. L. Wrenshall has become director of quality control by Chas. Pfizer & Co., Inc. He was formerly director of technical service. **F. H. Hedger,** formerly director of analytical laboratories, is now associate director of quality control. The appointments follow the consolidation of Pfizer's quality control activities. **E. F. Bouchard** has been promoted from assistant director of technical service to succeed Dr. Wrenshall. J. B. Roerig and Company, division of Pfizer, has appointed **Larry L. Larkin** as mid-western regional manager, and **Adam E. Klafta** as Los Angeles district manager. Mr. Larkin joined the firm in 1953 as medical service representative. Mr. Klafta has been with Roerig since 1950.

Howard A. Richter has been appointed district manager of the Minneapolis district of Ciba Pharmaceutical Products Inc. He succeeds **Clayton F. Leveque,** who has retired. Mr. Richter has been a professional service representative in Peoria since 1953. His new district encompasses most of Wisconsin, North and South Dakota, as well as the twin cities area of Minnesota. **Paul F. White** has been appointed district manager of the Chicago south district of Ciba. Formerly a hospital research associate, Mr. White joined the company in 1949.

David M. Ward, with Shulton, Inc., since 1954, has been appointed assistant national sales manager of the company's toiletries division, giving special attention to the further development of wholesaler, military and chain drug sales activities, in addition to field sales training, and acting as liaison between the toiletries and home products divisions.

Dr. T. Bassiri has joined Aromax Corporation as perfumer and chemist. He has published scientific articles on odors and their applications both in perfumery and in industrial work.

Thomas Engineering Company has named **Homer R. Culp** manager of manufacturing. Mr. Culp was formerly plant superintendent for the Mancelona and Elk Rapids plants of the Arthur Colton Company.

Viviane Woodard Cosmetics has promoted **William Deitenbeck** from public relation director to director of sales promotion. He is former vice-chairman of the national public relations committee of United Cerebral Palsy.

William H. Barrett, who joined Johnson & Johnson in 1957, has been named a product director for the firm's hospital division. **John E. McKay** has been named assistant product director to work on the development and promotion of a variety of baby products. Mr. McKay was formerly a salesman for the *Ladies Home Journal.*

Wilson Laboratories has appointed **Kenneth H. Lyng** sales representative for the eastern division, with headquarters in New York City. He has had ten years of experience in the pharmaceutical industry.

Dr. Henry A. Smith has been appointed staff physician in the medical department at White Laboratories. Dr. Smith has recently been consultant in cardiovascular and chest diseases for Los Angeles County, Calif.

MICHELANGELO'S MARBLE HEROES

didn't leap out of their blocks of marble by themselves

Nor does a perfume of beauty and distinction come into being without the creator's intimate knowledge of the medium, experience, talent and plain *hard work* . . . without which all the flame and fantasy in the world is not quite enough.

We feel we have an exceptional group of perfumers at D&O . . . with a sense of the *art* of perfumery and a *love* for it . . . backed up, not with Carrara marble, but with the finest perfume raw materials obtainable.

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OUR 161st YEAR OF SERVICE
Sales Offices in Principal Cities

Charles J. Dwyer has joined Standard Aromatics Inc. as vice-president and director of their Flavor Division. He was formerly head of the Organoleptic Department of Bristol-Myers Inc., and director of Dodge and Olcott's Flavor Division.

Girard A. Adams has joined the New York sales staff of Werner G. Smith, Inc., to cover the northern New Jersey, Metropolitan New York, and southern Connecticut areas. He was previously employed by General Aniline & Film Corporation and Continental Chemical Company.

Donald J. Vink, Holland plant superintendent for Parke, Davis & Company, has been assigned the added responsibility of the firm's new fine chemical manufacturing plant in Detroit, Michigan. The company has appointed **Dr. William Taylor** as a research pathologist, and **Ida Fai-Fong Fong** and **Valerie J. Beger** as research assistants at the research laboratories.

William A. Hanson has been transferred from the New York City district sales office, National Starch and Chemical Corporation, to western New York to represent the National Adhesives Division in handling the sales of packaging adhesives. **Ted A. Newman** has been transferred from Baltimore to the southeastern division and will be headquartered in Atlanta, Ga. He has been with the company since 1958. Mr. Newman will be replaced by **Lawrence Okun** from the New York City office.

Mead Johnson & Company have made two appointments in their personnel department. **Allan C. Siebers,** formerly director of personnel development, is now personnel director. He is succeeded by **Charles O. Neidt, Ph.D.,** formerly chairman of the department of education psychology and measurements at the University of Nebraska.

Isidore Bronfein has been appointed senior research chemist for the Mennen Company. He was formerly chief chemist for contract manufacturers in the toiletries and cosmetic industry. **Thomas J. Sullivan** has been appointed research chemist in the Research & Development Laboratories. He spent three years with Fluid Chemical Company as product development chemist.

New Jersey Machine Corporation has promoted **Herman Karl Schoenheiter** to technical sales and service engineer. Mr. Schoenheiter will specialize in the sale and installation of roll-fed labeling machines and will assist the users who convert from cut labels to roll labels to make the transition conveniently and readily.

Andrew Piszel has been appointed assistant production manager at Organon Inc. Mr. Piszel was formerly assistant to the president of Chase Chemical Company.

New Jersey Zinc Company has named **Donald A. Brown** sales representative for Tennessee, Alabama, Mississippi, and Louisiana, with headquarters in Birmingham.

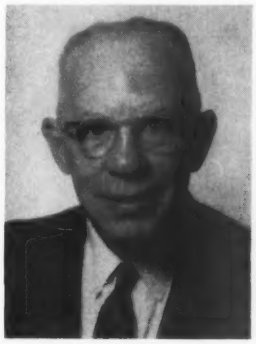
Firmenich Visiting American Offices

Fred-Henri Firmenich, son of Dr. Roger Firmenich and grandson of Fred Firmenich, founder of Firmenich et Cie. of Geneva, Switzerland, is visiting the Firmenich offices in New York, California, Chicago, Mexico City, Toronto, and Montreal. He is studying the main facets of American, Canadian, and Mexican industrial problems as they relate to perfume and flavor interests.

FRED-HENRI FIRMINICH

Gallagher Joins Quarter-Century Club

Norman E. Gallagher, New York sales representative of Ungerer & Company, recently became a member of the company's Quarter-Century Club. He has been with Ungerer since 1936.



NORMAN E. GALLAGHER

N.B.B.M.A. Officers

The 1961-62 officers have been elected by the National Beauty and Barber Manufacturers' Association: president, Nellie Fidel, Modecraft Company and vice-president, Mark L. Arend, Rayette. Vice-presidents are B. F. Breslauer, A. Breslauer Company; Frank Rosendahl, Wella Corporation; Frank J. Schaider, John H. Breck, Inc.; and Walter C. Smith, La Maur, Inc. Secretary is James R. Miller, Middlebrooke Lancaster, Inc., and treasurer, Harold F. Bertrand

The Association staff consists of Jacob Reck, executive vice-president and counsel, and John Patterson Curie, labor relations consultant.

Approximately 100 women attended the Cosmetic Career Women's February luncheon at the Waldorf-Astoria Hotel, N. Y. C. Above: S. DeRagon, American Cholesterol; C. Hellawell, Charles of the Ritz; S. Weidenfield, luncheon speaker, Rhodia; H. Stroz, Pacquin; M. Palmerio, Helena Rubinstein; J. Goldstein, Health and Beauty Information Service; E. Brand, Commercial Solvents.

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NEW YORK
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Chas. Pfizer & Company recently honored 28 employees for 25 years of service, at a dinner given at the Hotel St. George, Brooklyn, N. Y. John E. McKeen (standing center) president, presented each employee with an engraved gold watch and service pin. Seated: H. G. Hansen, E. McCord, F. Krauss, R. T. Barrett, and M. T. Becker. Standing: H. L. Denzler, and J. W. Stuart.

Mader to Chair Conference

Chairman of the first annual Conference on Pharmaceutical Analysis, to be held at the University of Wisconsin, Sept. 17 through 20, will be William J. Mader, director of the control division, Ciba Pharmaceutical Products, Inc.

Other outstanding men in the field of analytical chemistry will discuss the organization and function of the control and analytical departments, the latest developments and application in gas chromatography and fluorometric analysis, including x-ray fluorescence, from theoretical and applied aspects.

Registration applications and programs are available from Richard S. Strommen, Extension Services in Pharmacy, 301 Chemistry Building, Madison 6, Wisconsin. Accommodations are available for wives of registrants.

P.I. Establishes Operating Regions

The Packaging Institute has established four national operating regions for Institute activities. The four areas and their regional coordinators are West Coast, C. Paul Bolton, head of packaging research, Carnation Research Laboratories; Midwest, Carl B. Burnside, manager, Package Development Dept., Eli Lilly & Company; East, Thomas M. Glynn, vice-president of manufacturing, John H. Breck, Inc.; South, Thomas S. Lucas, packaging and standards section, Coca-Cola Company.

Each of these coordinators will be responsible for all membership meetings in their regions, except for technical committee activities.

Bluntschli Retires

Walter P. Bluntschli, vice-president and director of engineering at Ciba Pharmaceutical Products Inc., has retired after 31 years with the company. He joined Ciba as a project engineer. Mr. Bluntschli was born in Zurich, Switzerland and is an honorary member of the Swiss Engineers and Architects Society. He plans to continue his career as a consultant to the pharmaceutical, light chemical, or allied industries.

Wells Receives French Award

Le Prix International d'Esthetique et de Cosmetologie "Giuliana Brambilla," established by Laserson and Sabetay, for dedication to the field, has been awarded to F. V. Wells, chemist and editor of *Soap, Perfumery & Cosmetics*. Mr. Wells is an active and honorary member of many European and American cosmetic and perfume societies. He is the founder and served as first president of the Society of British Cosmetic Chemists.

F. V. Wells, chemist and editor, is recipient of an award given by Laserson and Sabetay.

Pillois Leaves Kolmar

Raymond Pillois, sales manager and a founder of Kolmar Laboratories, has resigned his position. Mr. Pillois is available for a new position in the cosmetic or perfume business, and may be reached at 27 Rue de la Ferme, Neuilly sur Seine, France.

Lueders Honors Two

Alfred Dittrich and Berardo Noguera were recently admitted to George Lueders & Company's Twenty-Five Year Club and honored at luncheons. The new members received gold wrist watches.

Expansions, Acquisitions and New Plants

Parke, Davis & Company plans a new surgical dressings manufacturing plant at Greenwood, S. C., to include administrative offices, a production and storage unit, and maintenance facilities. Completion of the buildings, which total 188,300 square feet, is expected by the end of 1961. All structures in the project will be of one-story design, with allowance for future expansion. The company will also construct a combined manufacturing laboratory and sales branch in Lima, Peru . . . **Allergan Pharmaceuticals** will build a new plant on three acres in Santa Ana, Calif., expected to be in operation by the end of 1961 . . . **American Felt Company** has formed a Filter Products Division, headquartered in Glenville, Conn. Karl Del Porte, manager, will be responsible to R. Power Fraser, Jr., general sales manager, for sales development and marketing activities of the new division. In addition to the Feutron Filter Cartridge, introduced a year ago, the new division will assume responsibility for sales development and marketing of the entire range of the company's dry and wet filter media line . . . **Shulton, Inc.,** has established the Home Products Division to be headed by William H. O'Brien, vice-president, to service drug stores, supermarkets, hardware and variety stores with the company's products . . . **Syntex Laboratories, Inc.,** have formed a new operating entity, Clark-West Division, to manage the manufacturing and distribution of nonhormone ethical specialties . . . **Becco Chemical Division, Food Machinery and Chemical Corporation,** has a new midwest distribution center at 649 North Ard-

The Big, Special Fragrance Issue

June *Beauty Fashion* will be a bigger, better, more complete directory and data book on all fragrances than the previous, special June issues. Exciting new feature articles and new market data on fragrances.

The issue you will want to keep!

more Avenue, Villa Park, Ill. David C. Howell has been appointed distribution supervisor . . . **F. J. Stokes Corporation** has established a subsidiary company in Great Britain to serve the growing demand for automatic plastics molding equipment and other high-speed automatic machinery for making pharmaceutical tablets and other similar products. The new subsidiary will market machinery throughout the British Isles, the Commonwealth, and countries of the European Free Trade Association . . . **General Aniline & Film Corporation** has formed an International Group with William Hansot as general manager of the corporation's main operations, which are divided into three groups, consisting of five divisions. The groups are the Chemical group, consisting of Antara Chemicals, Collway Pigments and General Dyestuff Company divisions; the Photo & Repro group, composed of Ansco and Ozalid divisions; and the International group . . . **International Minerals & Chemical Corporation** has acquired Bioferm Corporation by an exchange of 80,000 shares of the latter firm's stock for all the outstanding shares of Bioferm stock. Bioferm, which produces vitamin B_{12}, will operate under the Amino Division . . . **Mauvel Sales Company, Inc.,** has acquired the license to manufacture and sell the Antoine de Paris line of beauty products. Helen Blake, former president of Antoine, will continue in an advisory capacity . . . **Kerr Fruit Concentrates Inc.,** formerly Kerr Conserving Company of Portland, Oregon, has been acquired by **International Flavors & Fragrances Inc.** Kerr continues its operations as a wholly owned subsidiary under the direction of Stuart R. Kerr, vice-president and general manager, who has been associated with the company since 1926 . . . **Imco Container Company,** a division of Rexall Drug and Chemical Company, is moving its Chicago sales office into newer and larger quarters, at 711 Devon Avenue, Park Ridge, Ill., to accommodate its increased sales staff. The new office is under the supervision of Frederick L. Kocher, vice-president.

New Pharmaceutical Company

Pharmachem, Inc., has been chartered for the purpose of manufacturing and distributing ethical pharmaceuticals through the drug trade. Charles L. Gallman, president, has announced that Joseph R. Yates, formerly with the W. T. Rawleigh Company for ten years as production manager and chemist, is now in charge of production and is also serving as technical director.

Smith Kline & French Foundation

Colleges, schools, and hospitals throughout the nation received more than $110,000 during 1960 as a result of the "matching gifts" programs of the Smith Kline & French Foundation.

Under the programs, the Foundation equals donations of from $10 to $2000 by employees of Smith Kline & French Laboratories to educational or hospital institutions.

McKesson & Robbins Employees Receive Stock

More than 24,000 shares of stock, representing a value of more than a million dollars, were distributed to 2,709 employees of McKesson & Robbins under the company's Employees' Stock Purchase Plan.

Warner-Lambert Shifts Hudnut and Du Barry Sales

Warner-Lambert Pharmaceutical Company's sales and distribution of Richard Hudnut products are now being handled by the company's Products Division, instead of the Hudnut subsidiary. Hudnut products will now be available to customers under Warner-Lambert Products Division's consolidated sales plan.

Also, the DuBarry Division of Warner-Lambert has been created, to market all DuBarry, Ciro, and Sportsman products. E. Lloyd Bernegger is president of the Warner-Lambert Products Division, and Walter P. Kuenstler, who has been executive vice-president in charge of the sales of DuBarry, Hudnut, and Sportsman lines since last August, has been named executive vice-president of the DuBarry Division.

Erratum

Orbis Products Corporation has moved its Chicago office from 5719 North Central Avenue, to 5628 North Elston Aveue.

M. Maubert

Maurice Maubert, president and director general of P. Robertet & Cie, of Grasse, France, died on March 4.

Mr. Maubert was a member of the Legion of Honor.

C. A. Senger

Charles A. Senger, former vice-president and production manager of Albert Verley & Company, died on February 20.

Until his retirement last September, Mr. Senger had served the Verley company for 38 years, supervising the production of perfume compositions, as well as creating many new fragrances for cosmetics.

He was an active member of the Chicago Drug & Chemical Association and Perfumery, Soap and Extract Association.

Among the 150 who attended the Cosmetic Industry Buyers' and Suppliers luncheon in February, at the Hotel Pierre Roof Garden, shown, left to right, are Norman Chadwick, vice-president, Avon Products; speaker Maxwell B. Rogers, director of package design, Avon Products; Robert C. Ring, CIBS president, Hewitt Soap; D. D. Roush, CIBS general program chairman, Owens-Illinois.

(*Continued from page 472*)

Broadcasting Company for a 15-minute full network program to be aired on Sunday afternoons. At the last minute, the program was killed because of objections by the American Medical Association. The AMA advised Ciba that it would set a "dangerous precedent" to have strictly medical subjects under discussion at a time when the general public could tune in.

Drug companies, however, are still struggling with this problem. In February, at a central regional conference of the Pharmaceutical Manufacturers Association in Chicago, John L. Deal, advertising manager of The Upjohn Company, declared that "progressive thinking and experimentation" are needed to break the communications bottleneck. "In my opinion," he added, "there are two dual approaches.

"The first is to investigate every possibility of new channels to disseminate information to the physician. The many investigations of the use of public channels, such as television and radio, during 'off-hours' is a start. I do not believe we have found the answer, but I am encouraged by the investigations and believe they should be supported independently or through various councils such as the Council for Medical Radio & Television.

"Simultaneously, I believe we should explore the possibilities of utilizing open channels of communication to express the larger aspect of our business; specifically, that we, as manufacturers, are in the business of health . . .

"I would be very careful that you do not infer from what I say that we must set about to reshape the channels of our communication overnight. I do not think we can recommend to management substantial increases in corporate advertising budgets, especially at a time when the sale of brand name products needs attention. But I do think we can look for every opportunity within the present framework to accomplish what, in my opinion, is a very needed objective."

ADMINISTERING RESEARCH

(*Continued from page 436*)

nition, at least in his scientific research—and that, consequently, a scientist is pre-eminently fitted for the job. In addition to the scientific requirements for the job, most administrators feel that a good administrator must possess a distinct body of knowledge and practices.

The best administrator is one who frees the scientist to do his scientific work and minimizes the reports and forms that are necessary. From the scientists' viewpoint, the more business-orientated the research administrator, the less likely he is to merit their full confidence and cooperation; consequently, a scientist in the capacity of the administrator is to be preferred.

(*Continued on page 504*)

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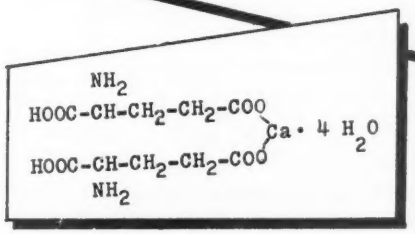
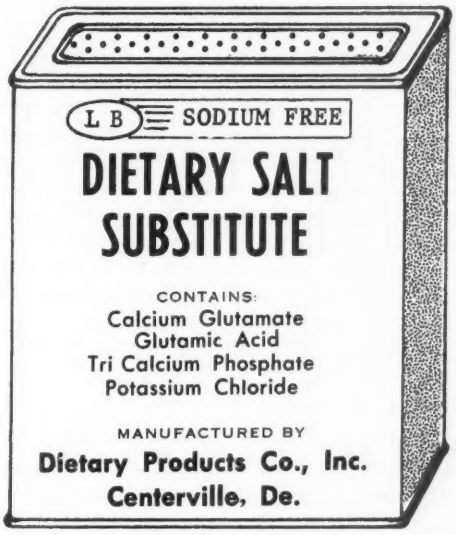


For Sodium-Free

Dietary Salts



New free - flowing Calcium Glutamate Lemke enhances natural food flavor, has no bitter, metallic after taste, does not cake and costs considerably less than Potassium Glutamate.

*Mono-Calcium-Di-Glutamate Tetrahydrate

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New Products

PHARMACEUTICALS

Chymar Ointment (Armour) contains in each gram 10,000 Armour units of proteolytic activity, 3.5 mg. of neomycin as the palmitate and 1.25 mg. of hydrocortamate hydrochloride, available in 5 and 15 gram tubes. The preparation is intended for the comprehensive management of inflammatory dermatoses, wounds, ulcerations and burns.

Psoriacid (Doak) is an applicator stick for the treatment of psoriasis. The SA stick contains 10 per cent of salicylic acid, the Mild stick contains 0.25 per cent and the Medium stick 0.5 per cent of anthralin.

Mucilose-Supper Powder (Winthrop) combines a hemicellulose obtained from psyllium and called Mucilose with 50 mg. of a wetting agent, Superinone, oxyethylated tertiary octylphenol - formaldehyde polymer, in 5 grams. The preparation is a demulcent, bulk laxative and stool softener, supplied in 4 and 16 ounce cans.

Mellaril (Sandoz) is a tranquilizer of the phenothiazine group with the generic name thioridazine in which the usual halogen atom is replaced by the thiomethyl radical. Advantages claimed are specificity of action and reduced side effects. The preparation is available as 10 mg., 25 mg. and 100 mg. tablets in bottles of 100.

Lipomul-Oral (Upjohn) has been improved so that it now contains 66 per cent of corn oil, polysorbate 80 and other emulsifying agents and cyclamate sodium as well as orange flavor; one tablespoonful thus provides 90 calories. The preparation is sold in one pint bottles.

Hycomine Compound Tablets (Endo) each contain 5 mg. dihydrocodeinone bitartrate, 1.5 mg. homatropine methobromide, 2 mg. chlorpheniramine maleate, 10 mg. phenylephrine hydrochloride, 250 mg. acetyl-p-aminophenol, 30 mg. caffeine for the relief of symptoms of respiratory tract infections. The preparation is available in bottles of 100, 500, and 1000.

Maturon (Ayerst) is an enzyme, vitamin, mineral compound containing the enzymes amylase, protease, and tryptase activity, along with the lipotropes inositol, methionine, and dehydrocholic acid, recommended as a dietary aid. It is supplied as bottles of 100 and 1000 tablets.

Creamlets (Winthrop) contain aluminum hydroxide gel and magnesium hydroxide in a chewing gum base as an antacid chewing gum, supplied in packages of 12.

Lomotil (Searle) tablets for the control of diarrhea contain 2.5 mg. diphenoxylate hydrochloride or 2,2-diphenyl-4-(4-carbethoxy-4-phenyl-1-piperidino) butyronitrile hydrochloride with a subtherapeutic dose, 0.025 mg., of atropine sulfate. The product inhibits excessive gastrointestinal propulsion. It requires a narcotic order form; structurally related to some narcotics, it exerts essentially no analgesia and no evidence of addiction has been reported. Available in bottles of 100 tablets.

Nacton (McNeil) selectively inhibits hydrochloric acid formation in the stomach and each tablet contains 4 mg. of poldine methylsulfate. It is supplied as bottles of 100 and 500 tablets.

Metahydrin (Lakeside) is trichlormethiazide, an orally active diuretic. The 2 mg. and 4 mg. tablets are available in bottles of 100 and 1000.

Oratrol (Alcon) is a carbonic anhydrase inhibitor of considerable value as a therapeutic agent in lowering the increased intraocular pressure in many types of glaucoma. Each tablet contains 50 mg. of dichlorphenamide and the preparation is supplied in bottles of 100 tablets.

Durabolin (Organon) is a long acting anabolic steroid for injection. Each cc. contains 25 mg. of nandrolone phenylpropionate in sterile sesame oil and the product is available one cc. ampoules and 5 cc. multiple dose vials.

Syntetrin (Bristol) is N-(pyrrolidinomethyl) tetracycline for parenteral administration. The intravenous form contains ascorbic acid, the intramuscular form ascorbic acid and lidocaine. Very high solubility in body fluids provides high tissue levels and permits a single daily dose of the antibiotic. Syntetrin is supplied as a dry, sterile powder, 150 mg. and 350 mg. single-dose vials for intramuscular and 700 mg. vial for intravenous administration.

PERFUMES

Lanvin Crescendo is the first new perfume from the company in 25 years. It is available as Lanvinette in ⅛ ounce; Extract in ½, 1, 2, and 3 ounce; Toilet Water in 4 and 8 ounce; and Toilet Water Spray in 2 ounce containers.

Jacques Fath has added three new perfumes to its line in the United States: Fath de Fath with a corresponding cologne; Green Water, in eau de toilette for both men and women; and Fath's Love in a 1-ounce bottle.

COSMETICS

Borden has introduced the Marcelle Hypo-Allergenic Roll-On Deodorant.

Mennen Face Conditioner is a clear liquid preparation, in a 3 ounce bottle, intended for acne care by teen-age boys.

Max Factor Swedish Formula Hand Creme is a cream lotion for hand care.

Pacquin Mani Magic is a cream cuticle remover available in a one ounce polyethylene tube with an elongated spout.

Amulet Laboratories Derma-Brite is a lotion for the treatment of acne and contains dispersible sulfur, zinc sulfate, zinc oxide and bithionol.

Helena Rubinstein Beauty Bath is perfumed bath oil available in 4 and 8 ounce sizes.

Wrisley Bath Powder with a matching container has been added to the French Lilac line of bath cosmetics.

Prince Matchabelli Tact is the first combination of a deodorant and antiperspirant in the stick form. A white antiperspirant cream forms a core within a light blue regular stick deodorant. The new Polyderm Moisturizing Lotion is described as being almost the liquid form of Polyderm Compensating Cream, a cosmetic treatment for dry skin.

Almay hypo-allergenic nail polishes in five new shades come in a redesigned nonspill container with a sable brush.

Management Forum

BY FRANCIS CHILSON, Sc.D.
PROFESSIONAL ENGINEER

Granulation

So much work is being done to improve granulation processes that a general review of the subject might be helpful.

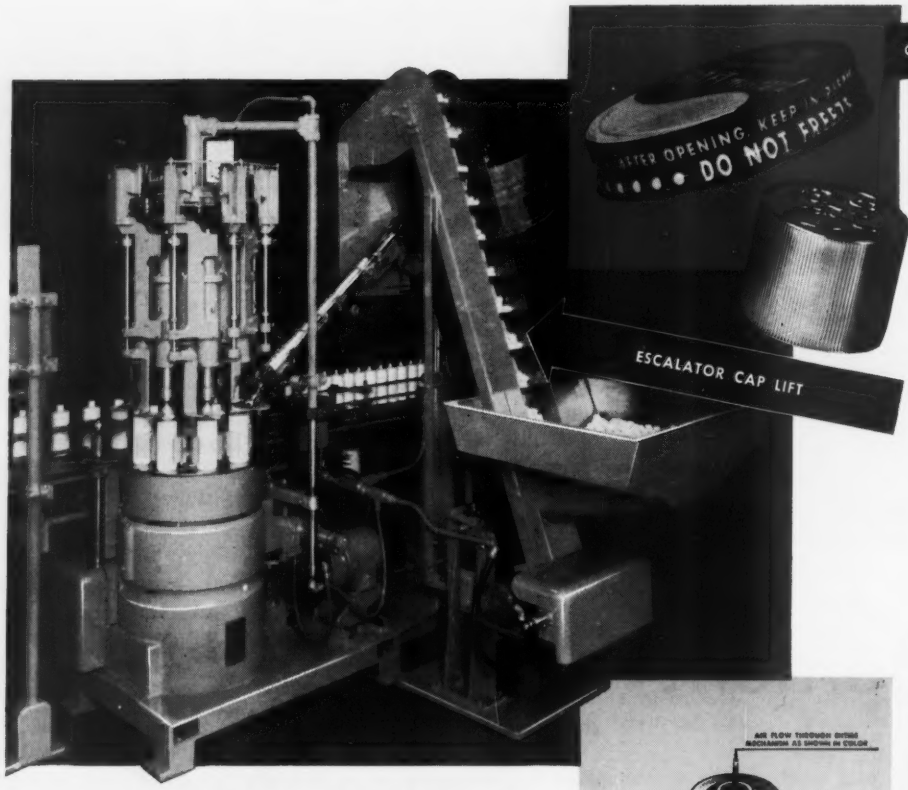
The purpose of granulation is to create free-flowing aggregates that will freely and accurately fill the dies of rotating-platen tablet compressing machines. Now the word "accurately" is of primary importance in producing tablets of uniform weight and accurate dosage. Obviously the weight of the tablets and the accuracy of the dosage contained in them depends on the specific density of the material of which the granulation is composed and also the size and number of the granules contained in a die of a given volume. Specific density has nothing to do *per se* with the granulation operation; it is a function of mixing and milling—in other words, the treatment the material gets before it is granulated. When a formula has been *thoroughly* mixed, and milled if required by the nature of the ingredients, granulations made from it of identical mesh size will weigh exactly the same. Hence, tablets made from given volumes of such granulations will be uniform in weight. But, since granulations are usually friable, a certain amount of powder or "fines" results from the handling processes and added lubricating material. In making some tablets by conventional methods, these fines are advantageous, when not present in excessive quantities, because they help to make smoother tablets. However, an excessive quantity of fines will cause weight variations and result in capped tablets. It is therefore of primary importance that the granulation mix delivered to the tablet presses be absolutely uniform. If, by means of rough handling and vibration, the granulation stratifies, weight variation in the finished tablets will result and adjustment of the tablet presses will be necessary. One would assume that the supply hoppers of tablet presses would be designed in a manner to prevent the vibration created by the tablet presses from being communicated to them, but they are not; they are rigidly attached to the machines without any vibration insulation at all. Actually the supply hoppers should not be attached to the compressing machines; they should be independently mounted on vibration absorbers.

Until recently, there were only two common methods of making granulation: the wet method and the dry or slugging method, the latter being used for moisture-sensitive materials such as aspirin. The wet method consisted of mixing the ingredients in a mixer, adding a gum or gelatin solution at the appropriate time to produce a mix about as moist as brown sugar—or sufficiently moist to produce a lump when squeezed by hand. In some cases the initial mixing is done in a conventional, horizontal dry blender, a pony mixer, or a cone or twin-shell blender. The mixed product then is milled to eliminate crystals, lumps, and large particles and to produce a uniform mesh size, relatively speaking. The milled product is then transferred to a pony or sigma-arm mass mixer, moistened, and mixed. The moistened product is then granulated by rubbing through a screen, either by hand or mechanically through a granulator, or through a mill such as the Fitzpatrick Comminuter.

The moist granulation thus produced is spread on trays, dried in suitable driers, re-granulated to get rid of caking, and lubricated by the addition of talc, stearate, oils, or pulverized waxes. In large production the processes may be continuous or semi-continuous through the use of a variety of belt or vibratory pan dryers, or rotating vacuum driers of one kind or another. In some instances, when the granulation is too fluffy, it may be densified by extrusion before granulation or otherwise, as is described below.

Moisture-sensitive materials are slugged in high-pressure tablet machines after preliminary mixing as described above, the slugs being about the size and thickness of Alka Seltzer tablets. These slugs are

MOST ADVANCED CAPPING METHOD of this day and age



CAP ADAPTABILITY UNLIMITED

All types of turn-on closures, can be handled by the firm, yet gentle action of the unique air chuck.

Supplementary aid does away with awkward task of dumping cap cases into hopper 6' above floor.

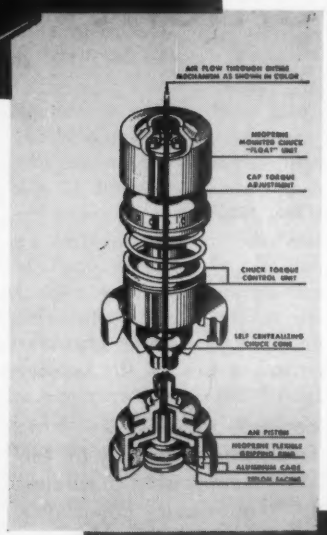
MONEY SAVING CONTAINER CONTROL

PNEUMACAP rotary capping machines include 2, 4, 6, and 8 head models. All feature the advanced design Pneumacap Air Chuck and Sterling Cap Feeders. When you add the Escalator Cap Lift you're as close to money saving automation as you can get today.

The air chuck alone is a major engineering triumph. It employs air pressure to squeeze a Neoprene ring so as to radially grip the cap. Feather weight design eliminates excessive mass, resulting in maximum sensitivity of torque control. Its adaptability is matched by its escalator lift and cap feeder team mates.

The PNEUMACAP is strong on container control, too—leaving nothing to chance. Get the complete details —write for the 8 page Capping Bulletin #146.

PNEUMATIC SCALE CORPORATION, LTD., 70 Newport Avenue, Quincy 71, Mass. Sales Offices: *New York; Chicago; Dallas; Rochester.* Agents: *Fred Todt Company at Los Angeles, San Francisco and Seattle. Rockwell Pneumatic Scale Ltd., Edgware Road, London, N. W. 2, England, O. R. M. A., Paris 8, France. Carbert Manufacturing Co., Division, Cambridge, Mass., Delamere & Williams Co., Ltd., Toronto.*



Applies metal, knurled, smooth, single or double shell caps and is especially well suited for handling the fragile molded types.

AIR CHUCK FLEXIBILITY

Receives caps in bulk quantities, sorts and feeds them in orderly array for "pick off" by rotating arms of capper. Models available to handle caps up to 89 mm.

STERLING CAP FEED

PNEUMATIC

Packaging and Bottling Equipment

ground to produce the final granulation. The method, of course, is slow and expensive, and, if the set-up is not properly designed and the slugs are too thick, too many fines will be produced and the granulation will have to be sifted to remove the fines for further slugging.

So much for the two usual methods. At this point it may be well to mention that there is revived interest in pan granulation, a very old process that in all but a few instances was abandoned 50 years ago. Usually it was confined to small batches. In this method the ingredients are put into a baffled coating pan and moistened with a spray or watering can. When adequately moistened, heated air is blown into the pan and the product dried. Such a method tends to produce spherical granules, which, in my opinion, are ideal for tablet making when they are not too hard. The control of hardness is a matter of formulation and procedure. In the old days, the method was objectionable because of the lack of dust control. Likewise there was a lack of means of controlling the temperature and humidity of the air supplied for the drying function. These objections have been overcome. Pans of a wide variety of shapes and sizes are available with or without baffles and also available are large doughnut-shaped pans driven from the periphery with front and rear openings so that drying air can be blown in at the front and exhausted from the rear.

Some years ago the writer designed for this purpose a horizontally mounted, internally baffled cylinder with conical ends. This rotatable drum was mounted on trunions so that air could be admitted to and exhausted from the rotating vessel through opposite ends. The same hollow shaft was used to admit a spray of granulating fluid and lubricating powders. The vessel was jacketed so that the granulated product could be dried under vacuum when required. In any case, this was a single piece of apparatus, as in the pan granulating method, designed to mix, moisten, dry, and lubricate the product.

The development of the patented Wurster process after World War II offered a rapid and easy means of preparing granulation, although initially the machine was designed for coating purposes. In this equipment the dry powders are fed into a vertical cylinder and supported upon an air stream being admitted continuously from the bottom of the cylinder in such pressure and volume as to cause the mass of powder to be suspended in the air stream in the entirety. Owing to the action of the air stream and the pressure-drop dome above it, the powder mass rotates in both the horizontal and verticle planes, the vertical flow being double, caused by the powder cascading from the perimeter of the cylinder toward the center. After a suitable period of premixing, granulating fluids are admitted at a constant rate and, at the same time, the air coming into the processing chamber is heated so that the action of granulating and drying is virtually simultaneous. The resulting granulation is in the form of small spheres that readily and uniformly fill tablet press dies because these little spheres flow like shot. Inasmuch as the Wurster vessel is not intended to mill the product, it is necessary to premix and mill powders that contain crystals or widely varying particle sizes. However, by increasing the air pressure, the Wurster machine could easily be made to mill the dry product before it is moistened, as it is well known that particles will grind themselves down to micronic sizes if subjected to sufficient attritive velocity.

Another method of preparing granulation is to use a V-shaped blender otherwise known as a twin-cone blender, such as the one made by Patterson Kelly Co., to prepare and moisten the inital mix. These blenders are designed with spray heads through which granulating solutions may be admitted by means of trunion mountings, and are also equipped with rotary beaters which help to mix and mill the powder. In some cases, the mixed and moistened product is transferred to a double-cone jacketed dryer and dried under vacuum. In other cases, just the double-cone vacuum dryer is used for the entire operation of mixing, moistening, drying, and lubricating.

These are the most widely used methods of granulating. However, I believe it is possible to produce a finished granulation continuously by using a vibratory feeder and a jacketed vibratory pan drier. As you know, the thickness of a moving film of powder on a vibratory pan or channel depends on the frequency of the vibration. The thickness of the film can be controlled from an almost imperceptible film of dust to a layer two inches thick. Therefore, suppose you had a vibrator with a hopper feed similar to the Syntron or Jeffrey vibrators and a channel of suitable width. Mounted above and across the channel would be a header having a series of fine sprays for the admission of granulation solution. At this point let me say this: You all know that when you wish to sweep a very dusty floor, if you first spray it with water, the dust will roll up in little pellets in the streams of moisture. The same thing will happen in a vibrating channel containing and conveying a thin film of powder. It might be desirable to use two or more spray heads to produce the desired result. The agglomerates or granulates thus produced would drop off into another vibratory drier, which could be jacketed for heat or supplied with heated air. As a matter of fact, the Jeffrey and Syntron companies produce both jacketed and heated-air vibratory driers. One virtue of the method obviously is that it could be used for small-batch work on a continuous basis, because it would be so easy to clean out smooth channels after each lot. A flush of hot water or wet steam would do the trick.

By the same token—and this to my knowledge has never been done before—I believe tablets could be coated in the manner outlined above. There is virtually no limit to what you can do with a vibrating

FOR DRUG AND COSMETIC PACKAGING

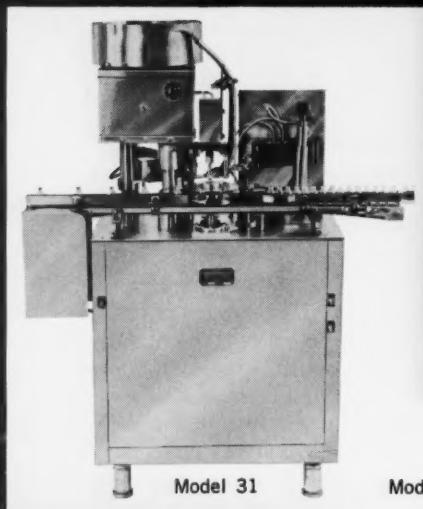
Leadership demands constant achievement

Model 31—Automatic vial filling and stoppering machine for glass and plastic containers.

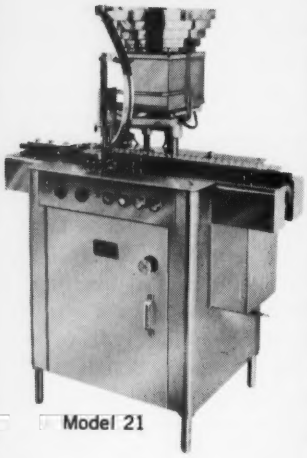
Model 21—Automatic Steriplug stoppering machine for vials and cartridges, glass or plastic.

Model 57—Automatic powder filling machine for vials and plastic bottles.

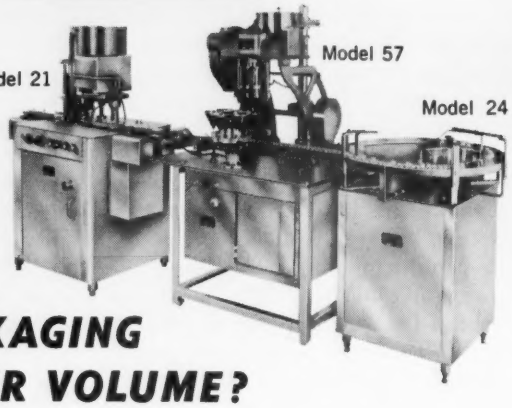
Model 24—Unscrambling or collecting table.



Model 31



Model 21



Model 21 Model 57 Model 24

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How do you compare with your competition cost-wise?

Chase industrial engineers are working constantly to find cost saving solutions to troublesome processing and packaging problems.

Shown above are only a few of the models featuring high-speed automatic filling and stoppering operations.

All with these BIG CHASE EXTRAS . . .

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channel. For instance, a channel can be provided with straight, right angle, or diagonal convolutes to produce a tumbling or reciprocal lateral flow. So get going with this idea and let me know how you make out.

To get back to granulating, we must discuss the most modern and, to me, most important method of preparing granulation: the Chilsonator. I invented it and The W. J. Fitzpatrick Company is building it. It was Al Kircher, president of Fitz, who christened the machine. Al likes names like Solidator, Compactor, Chilsonator. Anyway, the machine was invented as the result of a feeling that it is a ridiculous procedure to add water to a powder mix and then dry it out again in order to produce a granulation. It was and is uneconomical to waste so much labor, floor space, power, process and drying time, and capital, for the purpose of producing granulations that will flow readily in tablet presses. The slugging process as it had been developed was slow and uneconomical from every standpoint.

The Chilsonator was in the course of development for many years and on many products, especially during the war years at the plant of the Chattanooga Medicine Company. It is now used in this plant for the production of Black Draugh granulation. One man in a very small amount of floor space produces in excess of 3,000 pounds of granulation each day, and he does all the work involved in handling the bales of senna, which is the principal ingredient of the product, cleaning the senna, milling and mixing it, and, in the end, Chilsonating it. When Sam Noble, plant manager of Chattanooga (retired now), and I began working on the Black Draugh process years ago, the process occupied most of a sizable three-story building and required the services of at least six men. Now a better and more uniform product is being made in equal or larger tonnages by one man in about 2,000 square feet of space.

The Chilsonator will produce in 40 minutes what it takes 18 hours to produce by conventional wet granulation methods. It requires 75 per cent fewer man hours than conventional methods. It uses 20 per cent of the floor space. It uses 5 per cent of the total power required by the conventional wet granulation and drying method, and there is, finally, a 60 per cent saving in equipment cost. What the hell more do you want?

The Chilsonator consists of a pair of cored steel rolls scored with a particular style of grooving. The rolls revolve toward each other at a regulatable rate of speed and are fed in a regulated manner the product to be granulated. The product is squeezed between the nips of the rolls with pressures that may be varied from one to 50 tons psi. The rolls are cored so they may be heated or chilled as required. As redesigned by Fitzpatrick, every element may be regulated: material feed, pressure, speed of rotation, temperature.

The material produced by the Chilsonator comes off the rolls in irregular-sized corrugated placques, which are reduced to the proper granulation size by means of a subsidiary pair of granulating rollers. Naturally, it is not to be expected that you take a formula developed for conventional granulation processes and put it through the Chilsonator without some slight alteration. Some materials may even require four or five per cent of moisture added in order to "start" the Chilsonator, and this small amount of moisture can have no effect on the product because it is instantly removed by the heat of compression built up in the rolls, or, if necessary, by heating the rolls. At Chattanooga, we used brown sugar in the mix because senna contains a lot of pollen and is by nature extremely dry, and the brown sugar contains enough moisture to give the rolls a grip, yet the moisture in it is vaporized by the heat of compression and exposure to air that the granulation undergoes.

Granulation mixes containing substantial percentages of gums, waxes, fats, oils, and the soft protein matter will normally require the use of refrigerated rolls. The machine is designed for this. All the user need do is provide a refrigerating unit of suitable tonnage. Fitzpatrick maintains a testing laboratory in which your product may be tried out on the Chilsonator. A considerable number of these machines are in use in the pharmaceutical, veterinary, feed, chemical, and allied industries with extremely good results.

A final word on granulating processes: The day may come when the use of force-feed mechanisms on tablet presses and the use of pressure-sensitive gums as binders may eliminate the need for free-flowing granulation. I do not regard this development as by any means impossible, any more than I regard the tablet press as having reached its final stage of development.

Freeze Drying

Vacudyne Corp., 13419 S. Torrence Ave., Chicago 3, Ill., has designed a self-contained laboratory and pilot system for freeze drying.

Lament for the 400

"Society as we have constituted it has no place for me and will have none to offer," lamented Oscar Wilde long ago in his memorable *De Profundis*. At about the same time, but for different reasons, his lament was re-echoed by thousands of American parvenues who couldn't bust into the 400 because their millions had been stolen or extorted by themselves and not by their fathers. A highly sedate and respectable lot were the 400, but they had no objection to selling their daughters to impecunious European noblemen for the kudos of empty titles.

The 400 spawned a lot of idle bums and tramps who became, with Prohibition, Cafe Society, which eventually broadened its membership to include all sorts of lushes, fairies, jazz hounds, professional di-

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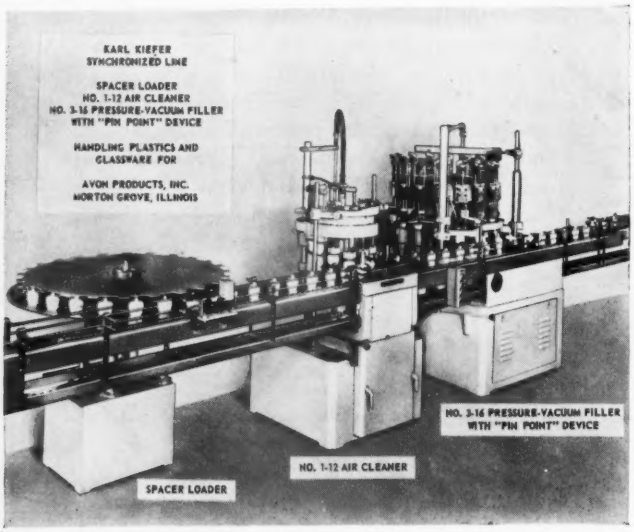
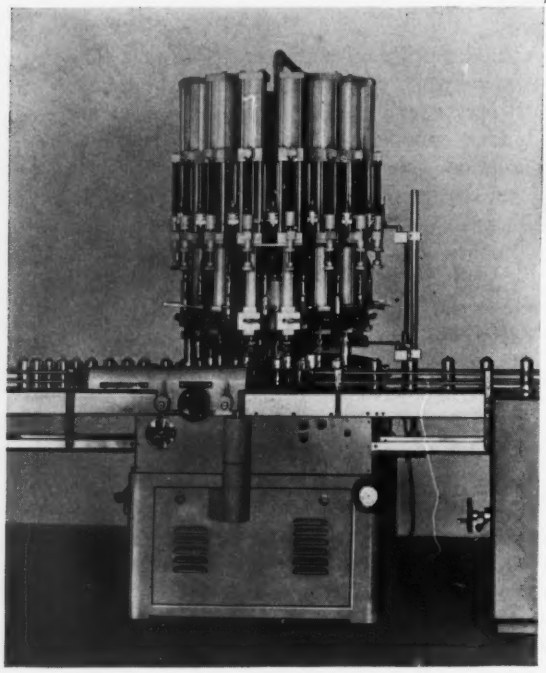
KIEFER PRESSURE-VACUUM FILLER
With the PIN-POINT device that does the filling WITHOUT the use of a SEAL. Amazing precision in — PLASTICS—TINS—GLASSWARE.





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Delivers up to 250 CPM depending on your valve selection. It will measure the propellent gas deftly and to perfection. We have greater and lesser chargers to meet your requirements.

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vorcees and other sorts of well-dressed idlers, plus any and all who could command publicity for themselves and the rest of the crew. World War II put an end to this putrid excrescence on the body politic.

But we must have an elite, and, since the posession of money is no longer regarded as a qualification for aristocracy, we must look elsewhere for a leading social class. I am afraid the elect will be the scientists and the professors. That will be the day! But it will be interesting to observe. Have you ever watched a professor dancing? He grips his partner close around the waist as if he were afraid that she might suddenly take off. He leans backward as he dances and scrutinizes his partner through his rimless bifocals while he discourses on the sex life of the amoeba, all the time holding his partner's arm straight out, pumping it up and down as if she were a well pump. Girls, you've got a lot to look forward to!

Rotary Jar Cleaner

Standard Metal Products Company, 123 N. Racine Avenue, Chicago 7, Ill., have developed a "turn over" jar cleaner that automatically compensates to handle any jar size without adjustment.

All foreign matter either falls out of the inverted containers into a bottom tray, or is removed by air pressure or suction into a vacuum bag. The air-cleaned jars are then turned right side up and delivered to a discharge conveyor, ready for filling. A spring assembly inside the housing automatically compensates for different jar sizes by providing whatever tension is needed for a tight grip on any size jar.

3600 Boxes Per Hour

Markem Machine Company, 170 Congress Street, Keene, N. H., has a new model 70AB automatic machine for printing flat surfaces of plastic or metal boxes, covers, pans, and similar items. It will make one-color imprints as large as 2 x 3 inches at a speed of approximately 3600 pieces per hour. The machine uses either a manually-fed chute or automatic feeding.

Bottle Wrapper

Halm Instrument Company has developed a fully automatic wrapper, using a heat sealing technique, which has a speed of approximately 90 bottles per minute.

The filled, capped, and labeled bottles are fed to a rotary wrapping table. At the same time, a roll of heat-seal, polyethylene—coated paper printed with photocell-sensing marks begins to move to the same spot. Sheets are cut from the roll en route. As each sheet reaches the wrapping table it is wrapped about the bottle and heat-sealed in place, eliminating glue. It speeds wrapping by feeding from a roll. The machine can be adapted to overwrap a wide variety of objects, either automatically or semi-automatically.

Skin-Pak Machine

Riegel Paper Corporation, 260 Madison Avenue, New York 16, N. Y., has a new Skin-Pak machine in fully automatic, semi-automatic, and manual models. Drapex skin packaging film is made in three types, for flat items, bulky products, and Drapex III for maximum confirmation to heavy items. All three types permit the use of uncoated and unperforated board.

Rotary Fillers

Kartridge Pak Company, 800 West Central Road, Mount Prospect, Ill., has two rotary filling units. The KP-1800 Under-Cap aerosol propellent filler, is the first pressure filler to put the propellent into the can before the valve is crimped into place. Both filling and crimping are done on the same head. The head comes down on the can, makes a pressure seal against the crown of the can, and injects the desired amount of propellent under the valve before crimping. Speeds up to 120 16-oz. cans per minute are possible with a six-head rotary filler.

The KP-1900 Coaxial Product Filler, which can be used for any viscous product, has, instead of a piston to push the product into the can, a metering piston that is itself pushed upward by the product as the can is being filled. The piston then drops by gravity on the return cycle.

The coaxial filler offers greater flexibility in changeover, faster speeds with fewer moving parts, and greater accuracy of fill—since the piston virtually "floats" in the product, there is negligible pressure difference around it, and almost no leakage by it.

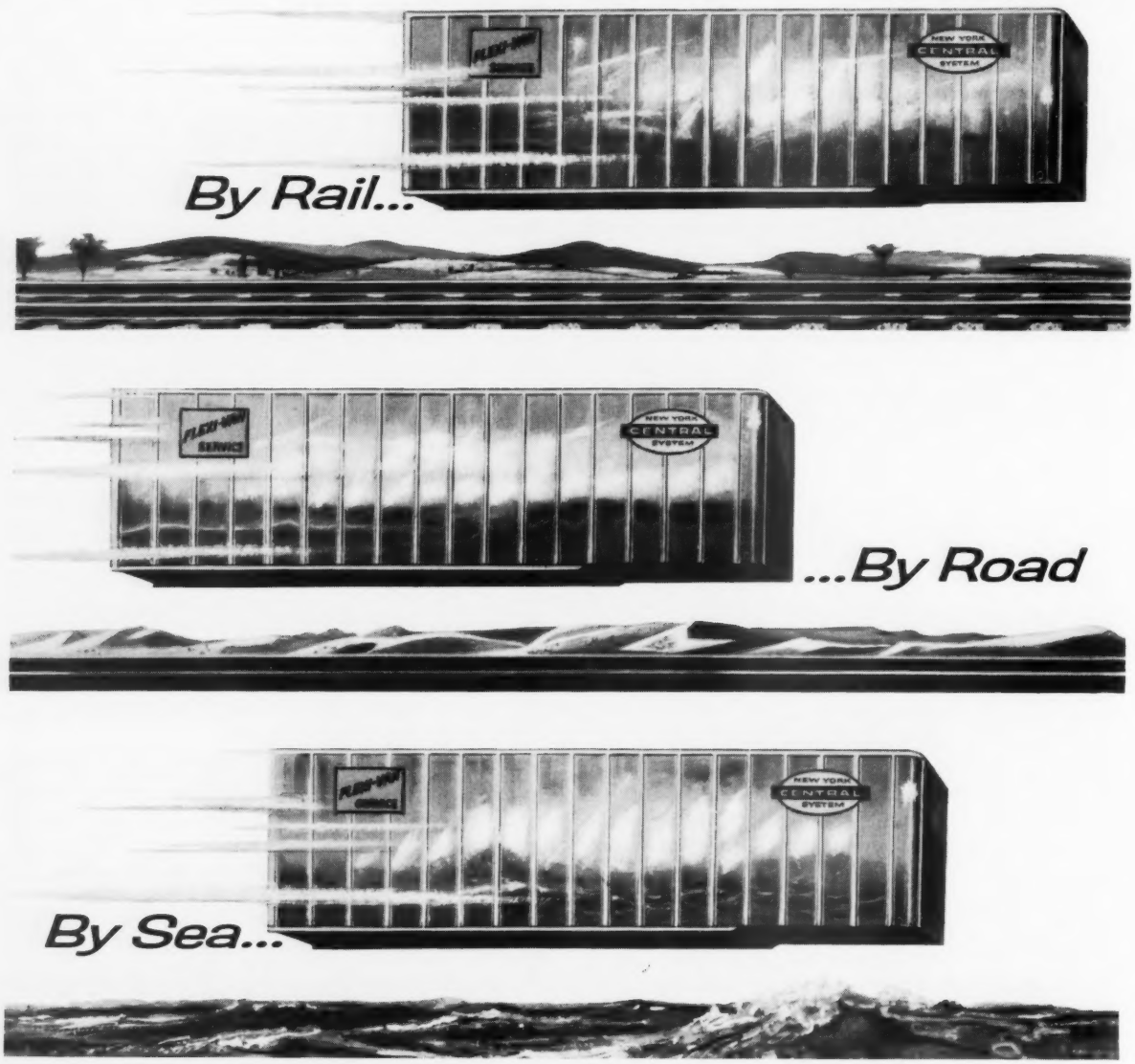
Carton Closer-Sealer

Specialty Engineers Company, Berkeley, Calif., has a series 600 carton closer-sealer featuring fast fully automatic operation, infeed control, compact mechanism for flap and lid closing, accurate glue application, and a new short compression section providing thermostatically controlled heat. Cold glue, hot melt or hot wax sealants can be used.

Airjet Sonic Defoamer

Teknika, 734 Asylum Avenue, Hartford 5, Conn., has developed a new compressed-air operated sonic defoamer. Constructed of stainless steel without moving parts, the new defoamer uses an air jet to generate extremely high intensity sound waves that shatter bubbles and disintegrate foam. Defoaming is made possible in those solutions in which conventional chemical defoaming agents cannot be used because of contamination.

Each sonic defoamer is furnished with its own air pressure regulator so that it can be installed wherever compressed air is available at any pressure above 30 psi. In a typical installation, a column of foam three feet high is collapsed in two seconds.



Here's the container of the future that can solve your shipping problems today!* New York Central's Flexi-Van

No matter what you ship or where you ship it, Flexi-Van can work to your advantage. This versatile container delivers from door-to-door, even if either door is miles from a railway terminal. Or even overseas.

Flexi-Van saves packing costs. Practically eliminates breakage and pilferage. Shippers benefited from Central's Flexi-Van so much that loadings more than doubled in 1960.

NEW YORK CENTRAL SYSTEM

ROAD TO THE FUTURE

***We'll bet you a good cigar** that a survey of your present shipping operations will show where Flexi-Van can save you time and money. Write, wire or phone W. M. Hoffman, V.P.-Freight Sales, New York Central, Dept. I, 466 Lexington Ave., N.Y. 17, MU 9-8000.

Dry-Type Air Filter

American Air Filter Company, Inc., Dept. PD, 215 Central Avenue, Louisville 8, Kentucky, has developed Dri-Pak, which provides air cleaning efficiences as high as 97 per cent. The new filter inflates when the ventilation system is in operation and collapses when the system is shut down, allowing the unit to be inspected and serviced from either the air-entering or air-leaving side of the filter bank. It is disposable, extremely lightweight, and each 24 x 24-inch cartridge is only 4 inches deep when folded, and weighs 4 pounds. Each filter is rated at 2000 cfm and provides 95 sq. ft. of filtering media surface.

Automatic Pallet Inspection System

Alvey Converoy Manufacturing Company, 9301 Olive St. Road, St. Louis 32, Mo., has a pallet dispenser equipped with special lift devices enabling the inspector to scan the top and bottom of pallets. Through the use of push buttons, he can optionally dispatch the pallet being inspected onto an automatic pallet stacker, from which it is picked off and repaired. Or, if satisfactory, he can send it onto the stacker to be returned to the palletizing area. The dispenser accommodates up to 20 pallets at one time.

Slurry Pump

Morris Machine Works, Baldwinsville, New York, has a new line of slurry pumps, known as JC, which have standardized components for easy repairs and changeovers, and are available in medium, hard, or extremely hard metal casings, impellers, and liners, with a stainless steel shaft sleeve. The pumps have heavy-duty thrust and radial ball bearing, and casing volute areas producing maximum flow with minimum turbulence, eliminating hot spots of wear. Impellers are threaded to shaft for protection. The JC series includes 11 models in six sizes: 1, 1½, 2, 2½, 3 and 4-inches.

Level Control

Electronic Controls Division, Flo-Tronics, Inc., 712 West Ontario Street, Minneapolis, Minn., has developed a fully self-contained capacitance probe-type material level control for direct mounting on bins, hoppers, tanks or other containers holding dry, semi-dry or liquid materials. The Flo-Level Model L201 Level Control is provided in both high-level and low-level units. Probe is integral with the explosion-proof control easing, and the entire instrument is mounted as one unit at the point of control desired.

Numbering Device

Weber Marking Systems, 215 E. Prospect Avenue, Mount Prospect, Ill., has a new numbering device for label-printing machines that will print consecutive numbers, duplicate from two to eight times before advancing automatically or repeat a number. It comes with up to seven digit wheels in a choice of Roman or Gothic type face with a wide range of sizes.

Laboratory Table Surfacing

Johns-Manville, 22 East 40th Street, New York 16, N. Y., has developed a new material for laboratory table tops incorporating a ceramic-like mineral glaze surfacing that has exceptional chemical and stain resistance. Colorceran is intended for service where continuous exposure to strong acids, powerful solvents, and chemical and bacteriological staining agents are encountered. It is surf green.

New Line of Ball Valves

Crane Company, Public Relations Department, 300 Park Avenue, New York 22, N. Y., has a new line of ball valves, in bronze, steel and type 316 stainless steel, and in a range of sizes from ¼ to 2 inches. The valves are rated for pressures from vacuum to 800 psi, and for temperatures from −40 to 400° F. They are two-directional, with low operating torque and precision-machined, chrome-plated ball. The seats are Teflon (by Du Pont) with controlled preloading. A tapered cartridge which contains the entire seating assembly may be removed easily while the valve body remains in the line.

Recorder

Quantitative analysis by gas chromatography usually requires measurement of the area under each peak on the recorded chromatogram. A new recorder by Fisher Scientific Company, 336 Fisher Building, Pittsburgh 19, Penna., automatically integrates the area while the chromatogram is being recorded. When the recorder pen leaves the zero line to start a peak, the integrator pen leaves its zero line and plots the cumulative area under the peak.

Once the peak is complete, the integrator pen leaves off at a reading proportional to the total area. When the pen has traveled the full width of the chart (the 9½-in. chart width is taken as 1000 counts), it automatically reverses.

The count is, then, 1000 plus whatever additional distance the pen travels on its return route.

The integrator curve can be started from either side of the chart, and re-set between peaks or allowed to continue, with a section for each peak.

Vibrating Feeder-Hopper

Cleveland Vibrator Company, 2828 Clinton Avenue, Cleveland 13, Ohio, has introduced a new feeder-hopper combination for moving bulk granulars and powders without contamination or dust.

Model 24S3-125 is two feet long with a 1½ cubic-foot hopper. Aluminum or stainless steel models protect food products, chemicals or any material which must be kept free from contamination. An air-powered vibratory drive unit mounted under the feeder supplies the force to move up to 6000 lbs. of granulations per hour. Completely enclosed, this feeder will operate while submerged in a liquid.

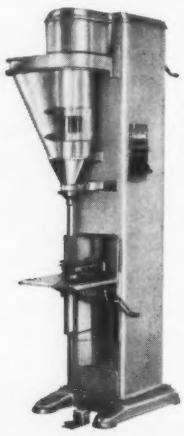
(Continued on page 542)

Versatile FMC Auger Fillers package diversified Merck line

Since 1935 the Chemical Division of Merck & Co. has used FMC auger filling equipment for packaging a great variety of drug products. The four machines now in service at their Rahway, N. J. plant fill bottles, jars, cartons and plastic bags in various sizes from 1 ounce to 1 pound. Among the many products of widely different densities and flow characteristics are such hard-to-handle materials as talcum powder and dextrose.

As with Merck, many other drug manufacturers also have found that FMC Auger Fillers have the versatility to successfully handle even the most varied product mix. The semi-automatic EG-1 shown here can be equipped with four filling methods (cam volumetric, packing, gross weight and volumetric combined with vacuum) for both tight and loose fills. As a result, this one unit handles powders, granules and certain pastes in an almost limitless variety of containers. Accurately, too. Changeover from one product or container to another is a matter of minutes, sometimes just seconds. So it's a perfect machine for short and medium runs in large or small plants. Many other FMC models—semi-automatic and automatic alike—are available to satisfy unusual requirements for accuracy of fill or type of packaging in both rigid and flexible containers at speeds up to 140 per minute.

For the full story on the FMC line of Auger Fillers, write for your copy of Bulletin P-811.



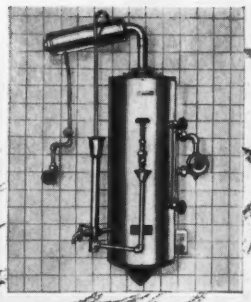
Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

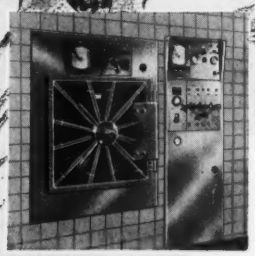
FMC Packaging Machinery Division

Stokes & Smith Plant

4912 SUMMERDALE AVENUE, PHILADELPHIA 24, PA.

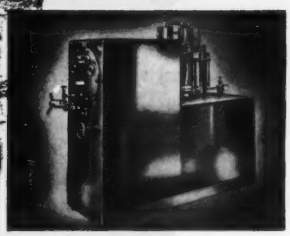


WATER STILLS
Capacities from ½ to 500 gal./hr.
Steam, Electric or Gas Heat.



STERILIZERS
Pressure Steam, Gas-Steam,
and Gas. Chambers 16″ x 16″ x 24″
to 60″ x 66″ x 120″.

TALK MICROBIOLOGICAL EQUIPMENT···



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For batch or continuous culture of pure
microorganisms in controlled conditions.

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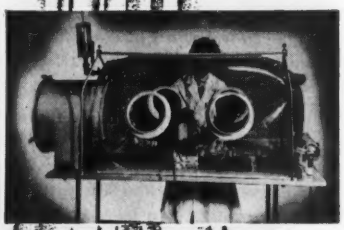
If you've a problem in this area, a letter to our Scientific and Industrial Department may lead to its economical resolution.



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Flexible film chamber.
Efficient, economical,
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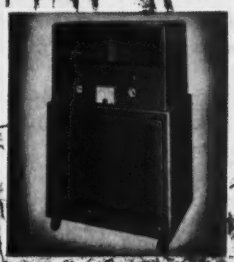

FREEZE DRY APPARATUS
Laboratory, pilot plant and
production models. Used for the
preservation and concentration
of labile substances.

GERM FREE LIFE APPARATUS
Complete service, including
flexible operating,
rearing and transfer chamber.

Compounder's Corner

Detecting Leaks in Ampuls

A number of methods for detecting leaks in ampuls have been proposed in the parenteral industry. These run from the most frequently used method, vacuum-dye, to the helium-high frequency spark method. The effectiveness of the vacuum-dye and other tests used for commercial products has been questioned for quite some time.

The present investigation was undertaken by W. J. Artz, W. T. Gloor, Jr., and D. R. Reese (*J. Pharm. Sci.* 50: 258, 1961) to study the vacuum-dye and other leaker-detection tests to determine which, of all the methods tested, is the most effective.

Four major types of leaks in hermetically sealed ampuls: (*a*) The capillary, the most difficult to detect, consists of an opening in the glass extending from the tip of the seal to the base of the seal. It is usually narrower at the top. (*b*) A crack at the tip of an ampul is usually found at the base of the seal. This could be caused by sealing too much glass, jarring the ampul when it is still hot, or by general mishandling. (*c*) Cracks at the base of the ampul are probably due to mishandling by the glass manufacturer or by laboratory personnel, but the cause is unknown. (*d*) An incomplete seal is characterized by an opening, usually larger than a capillary, at the tip of an ampul. This is caused by having too low a flame temperature or by removing the ampul from the flame prematurely.

The effectiveness of fluorescent penetrant inspection is based upon capillary action. When ampuls are immersed in the penetrant solution, the solution is pulled by capillary action into any defects that are present. A vacuum drawn on the ampuls will increase the penetrating action of the penetrant. Inspection is carried out under high intensity black light in a darkened area. Any defects, capillaries, cracks, etc., will glow with a yellow-green brilliance.

Fluorescent - penetrant inspection is used in the electronic and related fields very successfully, but before it can be adopted for detecting leaks in hermetically sealed ampuls, several factors must be considered.

The vacuum-dye method is probably the most widely used leaker-detection test in the parenteral industry today. It consists of immersing ampuls in a dye-bath, applying a vacuum, and subsequently releasing the vacuum, forcing the dye solution into ampuls that are not completely sealed.

Standardization of the vacuum-dye test has greatly increased its effectiveness; however, it has been found that this method is not as effective as the autoclave-dye test.

The pressure-dye method is essentially the same as the vacuum-dye test except that a pressure, instead of a vacuum, is exerted on the ampuls in a chamber filled with dye solution.

In comparison tests it was learned that the vacuum method was more effective than the pressure method.

In the autoclave-dye method, the ampuls are autoclaved while they are immersed in dye solution. They are then rinsed and inspected in the usual manner.

The autoclave-dye and the vacuum-dye methods were compared by subjecting ampuls first to one test then to the other to determine which is the more selective. The autoclave-dye method is more selective than the vacuum-dye method; but the difference in selectivity is great. Autoclaving does not necessarily detect previously undetected leakers but by nature of its extreme conditions, forces leaks in ampuls that may be weak, strained, or poorly sealed.

In addition to being more selective than the vacuum-dye method, the autoclave-dye method is more practical because it combines the detection of leakers with the sterilization of ampuls, thereby eliminating one step in processing.

Before this method is used in commercial production it will undoubtedly require some modification to handle the larger volume of ampuls.

When ampuls are immersed in a dye-bath immediately after autoclave sterilization, those containing leaks will pull in dye as they cool to room temperature. This is a very simple method and has been found to be at least as effective as the vacuum-dye method. In comparison tests, no leakers were detected by the vacuum-dye method in 12 batches of ampuls that were previously tested by dye-immersion after autoclaving. In 10 other tests this method did not detect additional leakers after the ampuls had been tested first by the vacuum-dye method.

If the ampuls are not immersed in the dye-bath immediately after autoclaving, some leakers will draw in air when they cool, and therefore will be unable to draw in dye when they are immersed.

The results of this study indicate that the most effective method for detecting leaks in heat-sterilizable ampuls is the autoclave-dye method. This method has the added advantage of the ampuls being sterilized at the same time that they are tested for leaks, thus eliminating one step in processing.

It also appears that a satisfactory leaker-detection method will result if ampuls are immersed in a dye-bath immediately after autoclaving.

For ampuls that cannot be sterilized by autoclaving, it is recommended that the vacuum-dye method, standardized as in this study, be used. Although not as effective as the autoclave-dye test, this method is moderately reliable.

Regardless of the leaker-detection method used, one cannot be sure

that all of the leakers (100 per cent of them) are detected. It is important then, that every possible means be taken to avoid leakers. Following are recommendations which may help reduce the number of leakers.

(*a*) The method of sealing should be used that will give the most satisfactory seal. It appears to be the consensus in the parenteral field that pull-sealing is more dependable than tip-sealing.

(*b*) The sealer should discard improperly sealed ampuls immediately. If they continue through processing, they may be overlooked.

(*c*) Ampuls should always be handled gently to avoid cracks caused by mishandling.

(*d*) A standard should be made for properly sealed ampuls, and any ampul that does not live up to this standard must be discarded.

Stabilizing Lanolin

Although oxidation of Anhydrous Lanolin, its precursors and components has been previously studied, most of this valuable work was based on accelerated oxidations or relatively short-term natural oxidation, or involved foreign lanolin refined by different processes, or reported changes only in acidity and peroxide value without distinction between surface and overall effects. It did not include long-term natural storage tests under good and bad conditions with a range both of antoxidants and concentrations in various lanolins. Also there are no reports about the depth to which autoxidation could penetrate, whether antoxidants inhibited other changes apart from those in acidity and peroxides, or whether there was similarity between the results of natural and accelerated oxidation of pharmaceutical lanolin.

Such investigations have therefore been made by E. W. Clark and G. F. Kitchen (*J. Pharm Pharmacol.* 13: 172, 1961), using antoxidants recognized as innocuous.

Many of the results from storage in closed jars at room temperature showed large fluctuations. While peroxide values may reach a maximum and then decrease as the rate of decomposition of peroxides exceeds the rate of formation, it is almost inconceivable that a value should re-approach the original one while oxidizable matter still remains, or that decomposed cholesterol should be regenerated. With efficient antoxidant systems instances of sudden fluctuations were few and effects were slight, and changes in all chemical and physical characteristics were satisfactorily inhibited for the duration of the tests.

Differences in rates of oxidation between different types of crude wool fat have been noted previously. With refined lanolin, the peroxide and acid values in particular showed that the samples differed greatly in their response to both oxidation and antoxidants, even though processes used in refining British lanolins had differed in only minor ways.

Long-term storage tests under good and bad conditions, and accelerated active oxygen method tests, have shown that autoxidative degradation of anhydrous lanolin can be satisfactorily inhibited for at least 32 months under good conditions or 2 years under bad conditions by 100 p.p.m. of butylated hydroxytoluene or butylated hydroxyanisole. Different lanolins are affected to different degrees, but autoxidation when uninhibited does not penetrate deeper than 1 cm. even after 2 years of adverse conditions; there is a fall in melting point and formation of up to 4.7 per cent of water-soluble substances including low-molecular weight acids. Absence of change in iodine value and rapid increase of acidity in darkness are contrary to previous reports.

Since the efficiencies of individual antoxidants were not linearly related to concentration no definite order of efficiency could be established. In general, however, B.H.A. was the most efficient single antoxidant, B.H.T. and propyl gallate almost as good, but α-tocopherol and ascorbyl palmitate much inferior although useful. Ascorbyl palmitate, and particularly citric acid, in addition to having antoxidant properties of their own, strongly augmented the effects of other antoxidants but, while in some combinations with α-tocopherol and B.H.A. there appeared to be true synergism, in others the effect may have been merely additive. Ascorbyl palmitate actually reduced peroxides already present in the lanolin at the expense of darkening the color; at low concentrations it had a pro-oxidant effect, as did also B.H.T.

Concerning all the antoxidants tested, the same approximate order of efficiency prevailed throughout, and where results overlapped they agreed fairly well with previous work.

Since B.H.T. had almost the highest efficiency and was free from any disadvantages in respect of solubility, color, permanganate test and acidity, it is indicated to be the most suitable general-purpose antoxidant for lanolin, a concentration of 100 p.p.m. being satisfactory.

Film Forming Resin

A new acrylic film-forming resin known as Carboset 511 has been introduced by B. F. Goodrich Chemical Company The resin is a water solution of an acrylic polymer that dries at room temperature to a clear, tough, glossy, water-insoluble film. It is supplied as a 45 per cent solution in water but is also available in alcohol solution

Carboset 511 is compatible with water dispersions of most polymers. Even small quantities of Carboset 511 make possible desirable modifications of dispersion and solution coating materials.

Films of Carboset 511 adhere well to metal, glass, paper and leather and to Mylar, polyethylene and vinyl films They are water resistant and will withstand even the effects of boiling water. Thin films can be removed with soap while thicker films can be easily removed with dilute bases. This alkali-solubility of the films is not affected by aging

The new polymer has been evaluated as a hair set component. Its films are not affected by moisture yet can be easily removed by shampooing. It adheres well to hair and its use in aerosol hair sprays is feasible since it is available in alcohol solution

Bulk Hair Dyes

A new line of highly purified oxidation colors, Pyloxidyes, for hair dyes is now being offered by Pylam Products Co., 799 Greenwich Street, New York, New York. The latest shades of red, gray, brown and black are now available for hair dye manufacturers.

Pylam offers descriptive literature and samples upon request which gives prices for the complete range of colors and quantities. The new Pyloxidyes colors are packed in containers from one pound to 100 pound drums.

(*Continued from page 487*)

Scientists express the opinion that the administrator's job is to enable them to conduct research more efficiently, and "red tape" artists in scientific administration only stand in the way.

Nevertheless, scientists cannot live in a dream world of their own without any contacts with the facts of business life. Planning and control must be based upon goals and procedures developed by all levels of researchers and management. The people in the administrative role gather, correlate, and integrate basic data, but the scientists themselves must contribute, and be aware of the significance of individual contributions in this area.

To achieve its own goals as well as compete in the international race for technological achievement, the U. S. ecenomy must make better use of its research scientists, according to a Princeton University Study.[2] Industry needs to find ways of managing scientists differently from other members of the industrial team. The goals of the research organization as a whole and the goals of the scientist coincide at one main point, and that is in the conduct of research. Both the organization and the scientist agree on the necessity and desirability of research. To simplify the problem, assume for a moment that this is the sole goal of the scientist. The administrator has at least one additional primary goal, that is, the maintenance of the research organization. This is not to say that the research scientist is not concerned with the maintenance of the organization, but only that he is less so than research directors and research administrators. The maintenance of the organization may conflict with the conduct of research. One way of maintaining the organization is through adequate control procedures for receiving and disbursing research funds. Such controls are necessary for a proper accounting to management. From the viewpoint of the scientist, this may not always appear as a commendable set of activities or even a very desirable goal, but from the point of view of the director, and especially the research administrator, this often becomes a primary focus of concern.

The end product of a research group is usually an idea or finding that may be developed and finally become a product sold for profit, or a published paper, or a book. The research administrator is responsible for the effectiveness of the operation within the research organization, but in no case can the research administrator be held directly responsible for the success or effectiveness of the research itself.

The research administrator must have the proper documents to make the organization accountable to the director and to his superiors. This gives rise to a number of administrative procedures for obtaining equipment, keeping inventory of available equipment, employing new personnel, arranging for travel to scientific meetings, and the like. If the scientist wants new equipment, or equipment is missing, or the scientist has exceeded his budget, the administrator must know why. As a consequence, practically everything that happens in a research organization is documented and must at some time pass over the desk of the research administrator. At times these documents are simply for his information. He may not always be able to evaluate the scientific content of a document, but he must act on it in other ways. He serves as a source of information on such items as procedures and budgets. In any case, the research administrator becomes an active partner in the research activities of the organization.

In any administration, services must be flexible enough to meet the needs of the particular organization it serves. It is possible, however, to make a fairly comprehensive list covering most line functions found in the research administration components. These functions may be divided as follows:

1. Operations and facilities
   - (a) Process and maintain records, requisitions, budgets, etc.
   - (b) Correlate space and equipment requirements, arrange for assignment and modification of space and equipment.
   - (c) Process and follow up surveys, requests for information, panel tests, etc.
   - (d) Coordinate the activities of service groups, such as analytical consumer testing, and library with other sections.
2. Product development and planning
   - (a) Assist in the preparation and processing of patent applications and new drug applications.
   - (b) Prepare and/or edit and encourage technical papers or reports.
   - (c) Assist with the formulation of project objectives.
   - (d) Plan for efficient utilization of manpower.
3. Personnel.
   - (a) Make recommendations on the hiring, placement, and transfer of personnel.
   - (b) Prepare position or job descriptions.
   - (c) Review and make recommendations for salary changes.
   - (d) Process and make recommendations for educational programs.

A scientist as research administrator has certain staff responsibilities in addition to the line functions mentioned above. Although he may not be as highly specialized in the scientific art as the research directors, his knowledge of a broader scope of activities permits him to act as liason with other staff groups such as finance and marketing. The research administrator will make activity and progress reports to management. He conducts surveys to determine the feasibility of initiating new research projects and also contacts outside organizations and universities.

The research administration must be headed and staffed by confident people with technical backgrounds and interest, who have the common sense

(*Continued on page 508*)

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PACING PROGRESS IN THE PHARMACEUTICAL INDUSTRY

(*Continued from page 504*)

to avoid one major hazard, Parkinson's Law.[3] These administrative functions should be headed by a man who has deep understanding of and sympathy with the real needs of scientists and management. Policies treating all employees alike just do not work with scientificailly trained professionals. The problem is one of knowing how to discriminate between individuals of different talents in such a way as to provide maximum satisfaction leading to maximum efficiency. The research administrator should have the vision and boldness to streamline procedures, reduce red tape, and destroy old records. He should be future-oriented and mainly concerned with methods of expediting today's research programs to make tomorrow's job easier.

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2. Kaplan, N. June 1959. Administrative Science Quarterly.
3. Chemical Processing. December 1960. : 9.
4. Murdick, R. G. July 7, 1960. Machine Design. : 100.

BUFFERING HUMECTANT

(*Continued from page 439*)

characteristics as consistency, spreadability, and feel on the skin were entirely subjective.

The tendency of the products to lose moisture was determined by placing 30 gram quantities of each product in a shallow aluminum dish, 6.0 cm. in diameter. The dishes were placed in a closed chamber fitted with a circulating fan and a tray of desiccant. The chamber was at room temperature. While the relative humidity in the chamber fluctuated considerably, it averaged 30 per cent. Identical samples, differing only in the choice of humectant, were prepared and tested at the same time.

Hair-Set Preparations

Pressurized hair sprays consist of an alcohol-soluble polymer, a plasticizer and one or more oily materials to provide gloss. This combination was dissolved in a mixture of alcohol and propellant. Polyvinylpyrrolidone (PVP), plasticized with glycerin, is commonly used in hair sprays. However, other gums and plasticizers are also employed in these preparations.

Sodium lactate and glycerin were compared in alcoholic solutions of PVP, and of Ciba Resin 325. The solutions were first applied to glass slides. The dry films were plasticized and clear, indicating that both sodium lactate and glycerin were compatible with the polymers. The solutions were than applied to hair swatches. These were set in curlers until dry, combed, and placed in a chamber with a circulating fan and a tray filled with water, to provide a high humidity. The hair swatches were evaluated after exposure for curl retention.

Results

Tables 6 through 15 contain formulations that have remained stable for several months at room temperature. Unstable formulas were generally not evaluated. The tables include subjective evaluations of the samples, as well as data on moisture loss. These data were computed on the basis of the per cent weight loss on the total weight of sample in the aluminum dish. Table 16 is a summary of results of the evaluation of sodium lactate in hair-set solutions.

TABLE 6
Antiperspirant Creams and Lotions

	Parts by Weight			
Part A	**2a**	**2b**	**13c**	**13d**
Kesscowax A-21*	5.0	5.0	3.5	3.5
PEG 600 monostearate	5.0	5.0	3.5	3.5
Sorbic acid	0.2	0.2	0.2	0.2
Part B				
Water	44.8	42.7	48.8	46.7
Glycerin	5.0	——	5.0	——
Sodium lactate, 70%	——	7.1	——	7.1
Part C				
Aluminum chlorohydrol, 50%	40.0	40.0	40.0	40.0

*Glyceryl monostearate, acid-stable, self-emulsifying, Kessler Chemical Co.

Moisture loss, percentage	After 1 day	After 5 days
2a	——	19.6
2b	——	51.0
13c	4.9	63.7
13d	10.9	68.4

Comparison of samples

Formulation 2a and 2b are both stable creams, with 2b much heavier in consistency than 2a. Otherwise the products are quite similar in spreading qualities and in feel on the skin.

Formulations 13c and 13d are nongreasy lotions that spread with a good lubricating quality. Tack during drying is very slight. The products appear to be identical.

TABLE 7
Antiperspirant Creams

	Parts by Weight	
Part A	**22a**	**22b**
Cetyl alcohol	15.0	15.0
Mineral oil	3.0	3.0
Myrj-52	10.0	10.0
Tegosept P	0.1	0.1
Part B		
Tegosept M	0.1	0.1
Glycerin	5.0	——
Sodium lactate, 70%	——	7.1
Water	26.8	24.7
Part C		
Aluminum chlorohydrol, 50%	40.0	40.

Moisture loss, percentage	After 1 day	After 5 days
22a	4.9	10.9
22b	10.9	28.0

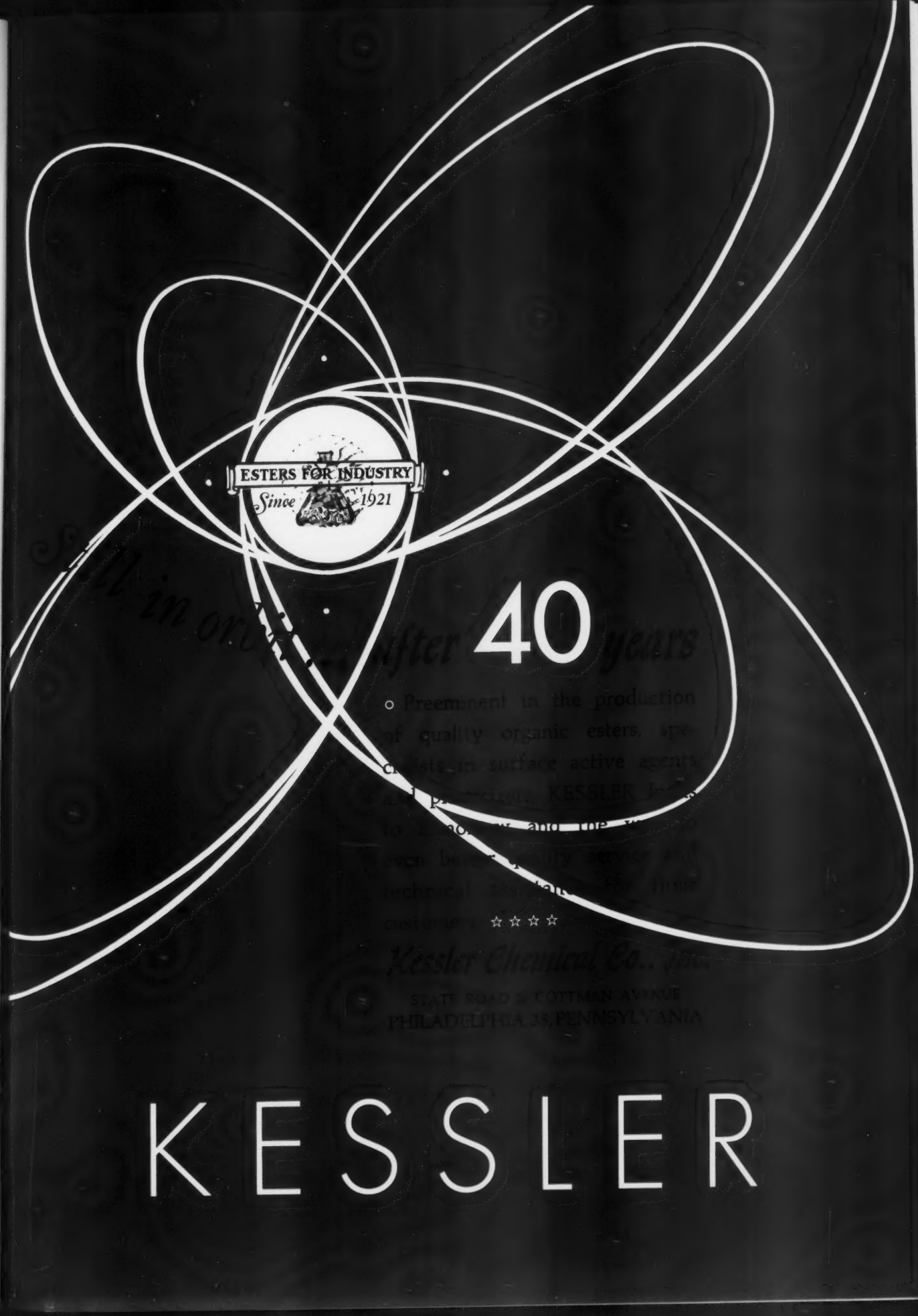
Comparison of samples

Formulations 22a and 22b are very heavy-bodied antiperspirant creams. Formulation 22b has a heavier consistency than 22a, and is actually too stiff to be useful.

TABLE 8
Cold Creams

	Parts by Weight	
Part A	**4a**	**4b**
White Petrolatum	30.0	30.0
Mineral oil	20.0	20.0

(*Continued on page 510*)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(Continued from page 508)

Paraffin wax (140° F)	10.0	10.0
Arlocel C	5.0	5.0
Tegosept P	0.1	0.1
Part B		
Tegosept M	0.1	0.1
Water	29.8	27.7
Glycerin	5.0	—
Sodium lactate, 70%	—	7.1

Moisture loss, percentage	After 5 days
4a	0.7
4b	0.7

Comparison of samples

Formulations 4a and 4b are typical soft cold creams. The products appear to be identical.

TABLE 9
Moisturizing Lotion and Cream

	Parts by Weight	
Part A	**5a**	**5b**
Glycerol monostearate	10.0	10.0
Isopropyl myristate	3.0	3.0
Polyethylene glycol 1000 monostearate	5.0	5.0
Lanolin anhydrous	1.0	1.0
Tegosept P	0.1	0.1
Part B		
Glycerin	5.0	—
Sodium lactate, 70%	—	7.1
Water	75.8	73.7
Tegosept M	0.1	0.1

Moisture loss, percentage	After 5 days
5a	64.5
5b	44.5

Comparison of samples

Formula 5a is a very soft cream, while 5b is a lotion. Both are pearlescent. Both products are excellent as hand lotion or cream.

TABLE 10
Emollient Creams

	Parts by Weight	
Part A	**11a**	**11c**
Stearic acid	15.0	15.0
Isopropyl myristate	7.0	7.0
Span 60	1.5	1.5
Tween 60	3.5	3.5
Tegosept P	0.1	0.1
Part B		
Tegosept M	0.1	0.1
Glycerin	—	20.0
Sodium lactate, 70%	28.4	—
Water	44.4	52.8

Moisture loss, percentage	After 5 days
11a	26.7
11c	34.0

Comparison of samples

Formulations 11a and 11c are examples of emolient creams containing relatively high concentrations of the humectants. Formula 11a is a firm, pearlescent cream with a slightly dull appearance. Formula 11c is a soft, liquefying cream.

TABLE 11
Protective Creams

	Parts by Weight	
Part A	**20a**	**20b**
Stearyl alcohol	15.0	15.0
Beeswax	5.0	5.0
Arlocel 80	1.25	1.25
Tween 80	3.75	3.75
Tegosept P	0.1	0.1

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Part B		
Tegosept M	0.1	0.1
Glycerin	5.0	—
Sodium lactate, 70%	—	7.1
Water	69.8	67.7

Moisture loss, percentage	After 1 day	After 5 days
20a	6.7	14.1
20b	7.2	15.0

Comparison of samples

Formulations 20a and 20b are medium consistency creams, with 20a more firm bodied than 20b. Both are pleasant creams with good spreading qualities.

TABLE 12
Pomade Creams

	Parts by Weight	
Part A	**14a**	**14b**
Beeswax	10.0	10.0
Carnation oil	45.0	45.0
Ozokerite 893	10.0	10.0
Tegosept P	0.1	0.1
Part B		
Tegosept M	0.1	0.1
Borax	2.0	2.0
Glycerin	5.0	—
Sodium lactate, 70%	—	7.1
Water	27.8	25.7

Moisture loss, percentage	After 5 days
14a	12.7
14b	5.0

Comparison of samples

Formulations 14a and 14b are pomade creams. Both are effective in keeping the hair in place. The two products appear to be identical in appearance and general properties.

TABLE 13
Shaving Preparations

	Parts by Weight	
Part A	**19a**	**19b**
Stearic acid	15.0	15.0
Mineral oil	5.0	5.0
Tegosept P	0.1	0.1
Part B		
Triethanolamine	3.0	3.0
Glycerin	5.0	—
Sodium lactate, 70%	—	7.1
Tegosept M	0.1	0.1
Water	71.8	69.7

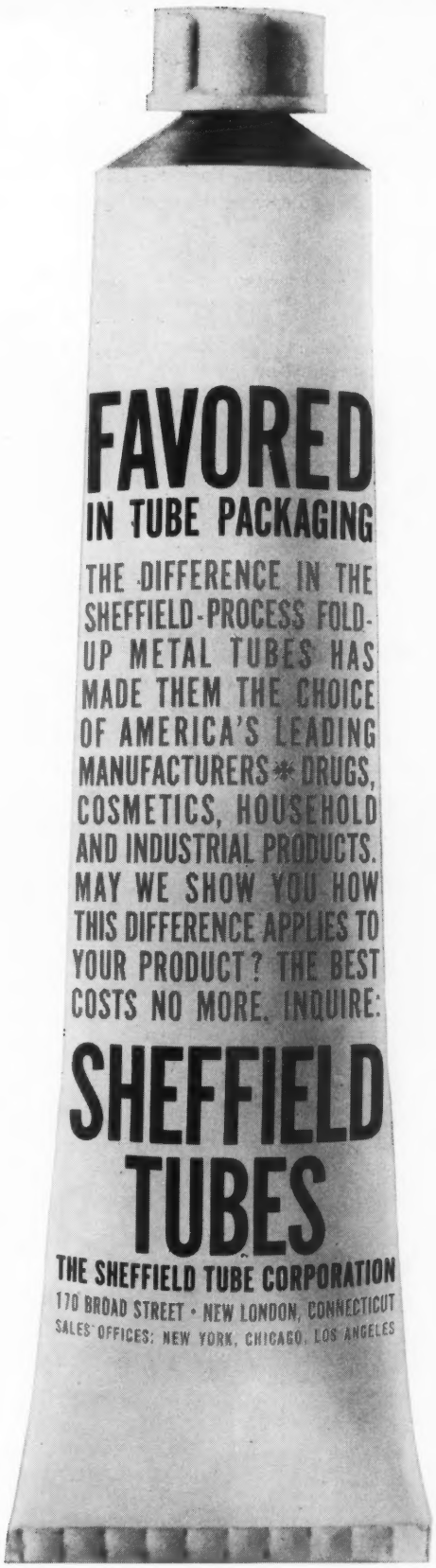
Moisture loss, percentage	After 1 day	After 5 days
19a	14.0	35.2
19b	38.0	50.0

Comparison of samples

These stearate-soap based products differ, as would be expected. With sodium lactate, the product is a very heavy-bodied cream. This is due to the sodium ion. In comparison, 19a is a liquid.

TABLE 14
Hand Creams

	Parts by Weight	
Part A	**23a**	**23b**
Stearyl alcohol	15.0	15.0
White Petrolatum	15.0	15.0
Tegosept P	0.015	0.015
Part B		
Tegosept M	0.025	0.025
Glycerin	5.0	—
Sodium lactate, 70%	—	7.1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Myrj-52	5.0	5.0
Water	57.9	55.8

Moisture loss, percentage	After 1 day	After 5 days
23a	9.6	17.0
23b	9.3	17.0

Comparison of samples

Formulations 23a and 23b are firm creams with good spreading qualities. Formula 23b is slightly firmer than 23a. Otherwise, the samples do not differ significantly.

TABLE 15
Shaving Cream

	Parts by Weight	
Part A	**25a**	**25b**
Stearic Acid, Triple Pressed	25.0	25.0
Coconut Oil Fatty Acids	5.0	5.0
Tegosept P	0.1	0.1
Part B		
Potassium Hydroxide	5.0	7.5
Sodium Hydroxide	0.9	0.8
Glycerin	5.0	—
Lactic Acid	—	5.0
Tegosept M	0.1	0.1
Water	58.9	56.5

Moisture loss, percentage	After 1 day
25a	28.0
25b	20.0

Comparison of samples

Both formulations are moderately stiff creams. The cream containing the lactate has a cheese-like appearance which is not attractive. The lather of both creams produced by working with a brush are similar in ease of lathering, creamy texture, and stability.

TABLE 16
Hair Set Solutions

	27a	27b	27c	27d	27e	27f
Resin 325 (Ciba)	5.0	5.0	5.0	—	—	—
Polyvinylpyrrolidone type	—	—	—	5.0	5.0	5.0
70% Sodium lactate	0.3	—	—	1.4	—	—
Lactic Acid	—	0.25	—	—	0.25	—
Glycerin	—	—	0.25	—	—	0.25
Alcohol (ml.)	45.0	45.0	45.0	44.0	44.0	44.0

Comparison of Hair Swatches Treated With Above Solutions
After Drying and Combing

27a Moderately stiff curl, no gloss
27b Moderately stiff curl, no gloss
27c Moderately stiff curl, slight flaking, very slight gloss
27d Stiff curl, appreciable flaking, moderate gloss
27e Stiff curl, appreciable flaking, moderate gloss
27f Stiff curl, appreciable flaking, moderate gloss

After 10 Minutes at 80° F., 85% R.H.

27a No curl, no gloss
27b No curl, no gloss
27c No curl, no gloss
27d Slight curl
27e Moderate curl
27f Very strong curl

Conclusions

On the basis of this experimental study, the following conclusions appear to be warranted:

1. Sodium lactate is an effective humectant in cosmetic preparations. It is generally compatible with other cosmetic ingredients, and it does not in-

(*Continued on page 514*)

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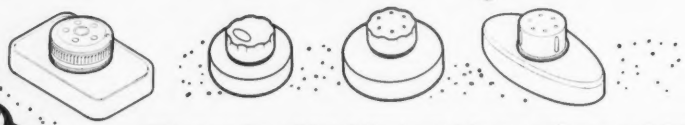

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TRADE LITERATURE

Raw Materials. Ungerer & Co., Inc., 161 Avenue of the Americas, N. Y. C. 13—reference list #61 describes new products for raw materials users. Included is an excerpt from "Perfumes and Cosmetics" by Dr. Atkinson.

Spray Dryers. Bowen Engineering, Inc., North Branch, N. J.—4-pg. bulletin #37 discusses special design spray dryers for pilot plant and hard-to-dry materials, and moderate production dryers. Also included are specifications of air heating, chamber sizes and construction, atomization, duct arrangement, product collection, and accessory instrumentation.

Rose Directory. Rose Museum Foundation, 244 St. George St., Saint Augustine, Fla.—pamphlet lists a wide variety of sources for roses, and products made from roses, including a listing of Eau de Rose by Camilli, Albert & Laloue, Inc., for flavoring and cosmetics.

Rotary Vacuum Filler. U. S. Bottlers Machinery Co., 4015 North Rockwell St., Chicago 18, Ill.—19-pg. illus. brochure describes the Rotary Vacuum Filler including specifications, elevation views, and attachments.

Mixers. J. H. Day Co., 4932 Beech St., Cincinnati 12, Ohio—8-pg. illus. bulletin describes the company's line of Cincinnatus mixers, which are double-arm mixers designed for the processing of viscous fluids and semi-solids.

Drug Market Data. National Wholesale Druggists' Association, 220 E. 42nd St., New York 17, N. Y.—220-pg. book ($10.00 per copy) is an analysis of drug marketing facts.

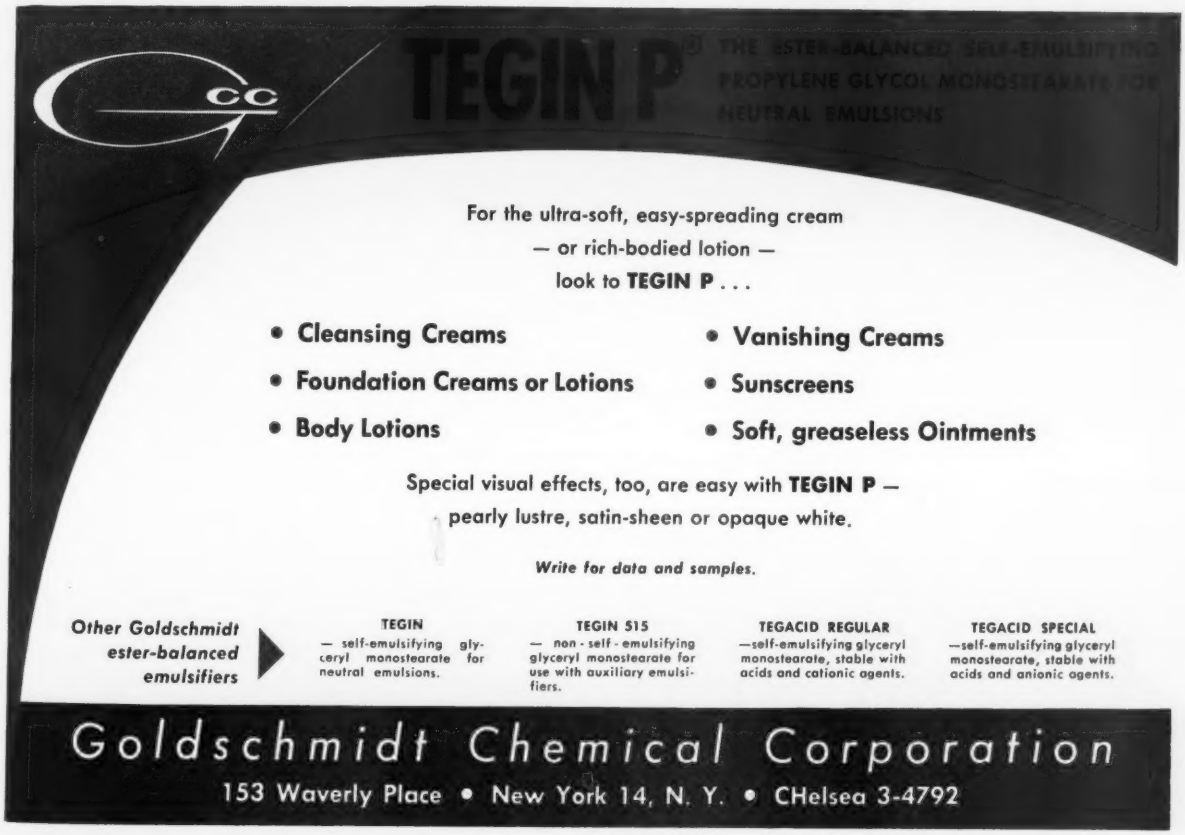
Washing Machines. Popper & Sons, Inc., 300 Fourth Avenue, N. Y. C. 10—6-pg., illus. catalog (#161W) describes complete range of 13 washing machines for vials, bottles, and ampuls, and a new high-speed system covering a fully automated line for washing of vials. This includes completely automatic loading, conveyorized washing, and fully automatic discharge.

Tw Drive. Pfaudler Co., 1127 West Avenue, Rochester 11, N. Y.—8-pg. bulletin 1001 describes the TW Drive which is designed to provide quiet, low-cost agitation in open or closed chemical vessels. Dimensional drawing, weights, agitator speeds, and hp ratings are included.

New Cellophane. American Viscose Corp., Film Div., Market Development Dept, 1617 Pennsylvania Blvd., Phila. 3, Pa.—4-pg. brochure describes characteristics and uses of Avisco 600 RS cellophane. The heavy-gauge, polymer coated film has a 12 per cent higher yield over competitive grades.

Rite-Size Box Machinery. Colt Packaging Machinery Co., 51 Washington Ave., Cranston 7, R. I.—catalog includes operation information, application, box size ranges, improved production rates and advantages of Rite-Size machinery. The new Corrugated Box Maker performs the functions of a slitter-scorer and printer-slotter in one operation. The size range is from 3 x 3 x 3 to 36 x 18 x 18 inches in either a tape joint or stitch flap.

Bactericides-Fungicides. R. T. Vanderbilt Company, Specialties Department, 230 Park Avenue, N. Y. C. 17—6-pg. technical bulletin (90) describes properties and biological activity of Vancide products. It also lists the uses and amounts of Vancide recommended in the major areas used: preservation, disinfection, sanitizing, deodorants, plants and animal disease.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(*Continued from page 512*)

crease the difficulty of preparing stable emulsions.

2. The spreading and emollient qualities of creams and lotions prepared with sodium lactate are comparable to those obtained with other humectants.

3. Sodium lactate, in combination with lactic acid, has a further advantage in that it serves as a buffer as well as a humectant. Moisture loss from solutions containing lactate is reasonably independent of *p*H.

4. The cost of sodium lactate is an additional advantage.

5. In certain instances it is not recommended. Like other electrolytes, it is incompatible with high concentrations of soap in aqueous solution. Humectant performance was not good in antiperspirant compositions, probably due to the formation of aluminum lactate. Hair-set compositions formulated with PVP and sodium lactate were found to be quite sensitive to moisture.

Acknowledgment

Grateful acknowledgment is made to Bowmans Chemicals Ltd., Moss Bank, Widnes, England, for their support of this study and for permission to publish these results.

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DERMATOLOGICAL RESEARCH

(*Continued from page 443*)

formulation. Such misapplication often seems to arise because promotional considerations lead to too hasty, ill-considered, or frankly fraudulent nonsensical formulations. A glaring example of the latter is the addition of vitamins of one sort or another to cosmetics. Although some slight absorption of a number of vitamins may take place through the skin, the very rare cases of vitamin deficiency states currently encountered require systemic rather than cutaneous administration of vitamins. The skin of nonvitamin deficient individuals has yet to be cosmetically improved by the topical application of any type of vitamin preparation, including royal jelly, which has been one of the recently promoted agents of this kind.

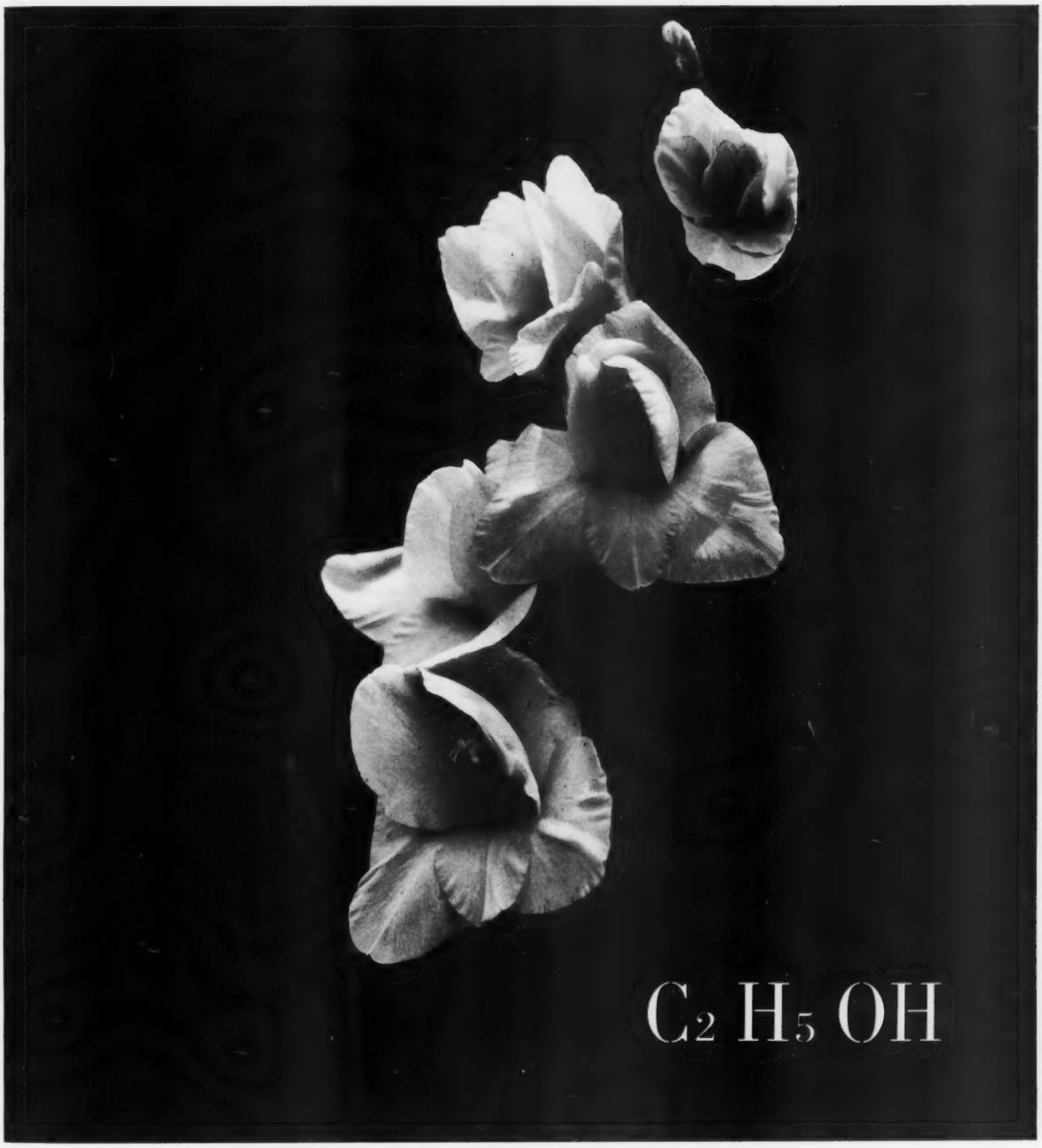
The hormones so far used in formulating cosmetics similarly have no legitimate business there. Predominantly estrogens and progesterone have been so abused. Estrogens, unless used in amounts that cause effects via systemic action following absorption through the skin, have entirely negligible effects on human skin and certainly have essentially no rejuvenating cosmetic effect. As concerns the topically applied progesterone preparations being marketed, even the negligible effects are unlikely. The recent attempts at pseudoscientific promotion of these essentially ineffective hormone-containing cosmetics, even to members of the medical profession, has been particularly annoying. Because of the apparent promotional appeal of ingredients in cosmetics which have sexy connotations, it isn't surprising to find materials such as placental extracts and pregnenolone finding their way into cosmetics in the same way as have the female sex hormones. I suppose vernix caseosa will be next.

Another area of misapplication of basic dermatologic research is the recent marketing of deodorant preparations containing antibiotics, especially neomycin. Shelley and associates[23] clearly demonstrated that axillary odor is dependent on bacterial interaction with apocrine sweat. Later, Ferguson[24] and others found that antibiotics could inhibit the growth of such odor-causing bacteria and thus suppress the development of axillary odor. The large-scale application, however, of the latter finding to deodorant cosmetic formulation seems unwise for several reasons. One is the likely encouragement of the development of antibiotic-resistant strains of bacteria in our environment. Already unusually pathogenic strains of antibiotic-resistant staphylococci have been inadvertently produced in hospitals as a result of extensive antibiotic use and these strains are wreaking havoc in many such institutions. A second objection to the use, particularly of neomycin, in cosmetics is that allergic sensitization may occur, which may, on occasion, cross-sensitize to streptomycin and so preclude the use of this important antibiotic in the event that urgent medical need for it should arise. Rather than using antibiotic agents of microbial derivation for the suppression of axillary bacteria, it would seem far preferable to use other safer, more general bacteria-suppressing agents such as hexachlorophene in deodorant formulations.

Finally, I would like to consider some of the areas of research on the skin in which support might bring important future dividends to the cosmetic industry. Besides the great importance of assembling a detailed catalog of the total biological properties of normal skin, the reactions of skin to various types of injury and the mechanisms by which such injury is produced also deserve careful investigation.

Furthermore, the changes in the skin ordinarily interpreted as due to aging need much further basic study. Certainly changes in the cutaneous connective tissue, particularly the degenerative changes described by the terms senile or solar elastosis which are produced in such tissue mainly by chronic solar exposure, are of prime importance here. Detailed study in this area is essential for solving the problems of practical prevention or reversal of such changes. As concerns aging of nonexposed or nonweatherbeaten skin, we have only fragmentary descriptive knowledge at present of the changes which occur. Understanding of the etiologic mechanisms still remains to be developed, along with solutions to

(*Continued on page 516*)



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(*Continued from page 514*)

answers have yet been given to the simple questions of to what degree cutaneous aging is intrinsically determined by the genetic and environmental history of the skin itself, or to what degree such aging is secondary to vascular, endocrine, or other senile changes in the individual as a whole. Some preliminary experiments with serial homografting of skin to young hosts in inbred strains of mice have been attempted, and degenerative changes are rumored to have occurred in such repeatedly grafted skin. Whether such changes can be interpreted as being simply the result of aging cannot be properly evaluated, not only because the cutaneous aging process is poorly defined in mice, but also because it is hard to assess the possible role in producing the observed changes played by trauma incidental to the repeated grafting procedures. Perhaps, when the homograft problem is solved, this question of the degree of cutaneous intrinsicity of aging in man can be satisfactorily answered.

The superficial atrophic appearance and fine wrinkling of nonweathered senile skin is apparently more dependent upon the flattening or atrophy of the dermal papillae than upon reduction of epidermal thickness or its reproductive ability. In fact, there is good evidence that epidermal mitotic indexes actually may increase with advancing years.[25] A conspicuous feature of the atrophy of dermal papillae in senile skin is loss of the delicate elastic fibers that radiate from the papillae toward the epidermis. In general, aging seems to modify the dermis and the cutaneous appendages much more than the epidermis and its various functions, including keratinization and pigment formation. With advancing age, the amorphous ground substance of the dermis decreases, while collagen fibers increase, and the mucopolysaccharide-containing, PAS-positive so-called basement membranes between epithelial and endothelial structures and their connective tissue stromata become more conspicuous. It has even been suggested that the prominent subepidermal membrane in senile skin deserves the name senile stria.[26]

In summary, senile skin can be viewed physiologically and biologically as having generally reduced homeostatic faculties and greater vulnerability to injury. Much research is required before we can hope to understand or control such aging changes.

The problem of eczematous reactions, especially to various dyes and perfumes used in cosmetics, is of great importance to the cosmetic industry. Basic studies on the mechanisms by which such eczematous reactions are triggered and maintained in the skin, whether by primary irritants or allergic sensitizers, greatly need support. At a time when great new strides are revolutionizing basic concepts in the field

(*Continued on page 520*)

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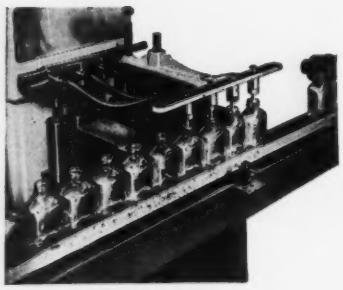

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British Men's Fragrance

Generally the perfumes used in male cosmetics in England are unobtrusive, or essentially masculine, yet, many of the 'manly, clean and fresh' fragrances used, and chosen, are virtually identical with, or easily modified to, those worn by women —despite the masculine containers and the He-Man, Military, and Executive names. Cologne with lemon, citral or verbena notes, lavender, leather, fern, mosses (particularly Oak moss with its 'green' note), cedar and sandal woods, aromatic spices; even chamomile are used. Pine is thought to be the most popular, but in practice is rarely chosen.

The biggest headache of companies in this trade is to persuade men to try just one of their products; this would be the critical breakthrough from which much would follow. Unfortunately men are said to be reluctant and embarrased over asking for lotions and colognes in shops. This awkwardness has to some extent been met by self service and separate displays. Most men get their first toiletry as a gift from their wife or girl friend. The bulk of sales of men's products are in the two months b e f o r e Christmas, and of these 80 per cent or more are bought by women. During the rest of the year men mostly buy—with another peak, for talcs and refreshing colognes, during the hot July/August holiday season.

The general opinion in the trade seems to be that man must not be rushed—the inherent British suspicion must be broken down slowly. There must be a gradual build up of sales. The promotional accent is on a 'Sportive' theme—all types of sport, all the year round. This line of virile male is widely used—outdoor types —on horseback, driving fast cars, as yachtsmen; the 'rugged handsome sportsman of distinction' that the ordinary man likes to fancy himself to be—an appeal to the man in the street. Another approach is the well groomed, well dressed man—'confidence comes from impeccable grooming': ambitious man of action, particular in his work, and over his appearance. The politician, diplomat, ambassador—the status, s n o b approach.

—*Chem. Prod.* 24: 52, 1961.

Odor in Packaging

Organized by the Institute of Packaging in collaboration with three food manufacturing associations, the Odor in Packaging Conference tackled many problems facing the packaging industry. The conference was mainly concerned with odor problems of materials for packaging *foods*, but certain general problems emerged which might apply equally to manufacturers of cosmetics and toiletries, according to A. Moorhouse (*S.P.C.* 34: 61, 1961).

It was tacitly agreed by food manufacturers and packaging firms alike that the odor problems were serious and difficult to solve and that little progress had been made during the past five years. Packaging and printing representatives affirmed that better day-to-day results could consistently be achieved: (1) if they were not so frequently under pressure for quick delivery since, given sufficient drying time, paper and printing odors are greatly reduced, and (2) if manufacturers were less insistent on the very newest, often unpredictable, types of wrapping material.

Many of the speakers made a plea for research leading to completely odorless packaging materials. Others at the conference protested that to aim for complete *elimination* of odor was unrealistic and advocated the more easily attainable aim of *minimizing* odors in all types of packaging materials and inks. To emphasize the near impossibility of odorless packaging, one delegate said, "the customer doesn't know what a good chocolate really tastes like, because she buys it wrapped." It was also agreed that although virtually all odor *can* often be eliminated, in so doing the characteristics of the packaging material are thereby altered, i.e., in the case of board, it becomes too dry and hard.

Natural Odors

There are about a score each of the wild and cultivated Eupatoriums, named after Eupator Mithridates. All species exhibit copious oil glands in the leaves, as is particularly evidenced by *E. resinosum*, but probably the most familiar plant in S. Europe is *E. perfoliatum*, Thoroughwort, Indian Sage or Feverwort. This shows the familiar cineole —camphor—thujone complex, b u t something of a clove nuance is observed in the foliage and dull pink flowering tops of *E. cannubium*, the Common Hemp-agrimony, although the roots have a strong, pungent, wild parsnip-like odor. In the flowering tops of the E. African *E. aromaticum*, *E. Weissmanianum* and the B.W.I. *E. odoratum*, a clove-pink odor appears to be more in evidence, while among the Central S. American *Ayapanyas* (*E. triplinerve*, etc.) the fragrance is more floral, as may perhaps be expected from the report of the presence of thymol-hydroquinone methyl ether.

A herbal-tagetes nuance is widely spread and is particularly in evidence among the common *Bidens*, the yellow-flowered Beggar-ticks, also known as the Swamp and Water Bur-marigolds. The white blossoms of the Mexican *B. odorata* have a pronounced coumarin-like s c e n t. Further elementary fragrance-types are n o t e d for the N. American anisic-sage-like *Lepachys pinnata*, and *Borrichia arborescens*, the Jamaica Samphire, and many yellow-flowered species of the Peruvian *Verbesina* or Crown-beards. A freshly-cut hay fragrance is found in the foliage as well as in the small yellow sunflower-like blossoms of the N. American *Rudbeckia subtomentosa*, one of the several Californian "Coneflowers," as also in *Ageratum Mexicana*, the Floss Agrimony, and is particularly in evidence among the N. American purple-flowered *Trilisa paniculata* and *T. odoratissima*.

On this kind of foundation, and in liaison with borneole, cineole, pinene and clove, the emergent odor tends to emphasize one of these dominants. For example, the N. American *Helenium autumnale* emits, when crushed, a strong balsamic pine redolence which is also observed among the *Madia* and *Hemizonia*, which are the Californian "Tar-weeds."

The genus Arnica affords some interesting material for consideration and, although the only common wild species is *A. montana*, the Medicinal Leopard's-bane or Mountain Tobacco, yet there are also about a dozen garden species. The yellow flowers of some of these varieties have been reported to yield a fragrant oil, and the aroma would seem due to the presence of thymol-hydroquinone ethers, or alternatively phlorol (*ortho*-ethyl phenol) methyl and butyl ethers, resulting in a warm, aromatic, melilotus-like nuance.

The fresh roots, however, are reported to have somewhat of a basic radish note on a strong apple-like background, a peculiar liaison but by no means unpleasant, and conveying the suggestion that such additions to rooty bases like galbanum or vetivert may be worth investigating.

—E. S. Maurer, *S.P.C.* 33: 1215, 1960

Indian Curry Leaf Oil

Murraya Koenigii (Linn), Spreng or Kari-pat as it is known in Hindi, belonging to the Natural Order of Rutaceae, is a small, strong-smelling shrub or a small tree with imparipinnate leaves. Its height varies from 3 feet (Deccan plateau) to 15 feet (sub-mountain region of the Himalayas).

The leaves have been reported to give a glucoside, provisionally named 'Koenigin,' and a bright yellow essential oil in a yield of 0.04 per cent with a rather disagreeable smell.

This oil was, however, obtained from the dry leaves, and the percentage of the various constituents was also not reported. More recently, however, Dutt has reported the isolation of a brownish-yellow oil by distillation of fresh leaves with steam at 90 lb. p.s.i. pressure in a yield of about 2.6 per cent.

Since the yield of the oil obtained with saturated steam superheated to 220° C. increased to 2.9 per cent with the oil turning dark brown and a change occurring in its physical constants it was thought desirable to study the essential oil obtained from fresh leaves by water distillation method and compare its composition to that obtained from dried leaves and under drastic conditions used by Dutt, especially as the yield of the oil from the fresh leaves of young plants was found to be about 1 per cent. A comparison of the physical properties by S. S. Nigam and R. M. Purohit *P. & E.O.R.* 52: 152, 1961) of these oils clearly shows that the drastic conditions, though increasing the yield, spoil the essential oil, as is evident from the darkening of its color and increase in its acid value.

This oil was found to have a higher optical rotation and the following percentage composition, consisting of a greater percentage of simple monocyclic and bicyclic terpenes and a lesser percentage of sesquiterpenes, as compared with the essential oil obtained by using steam under pressure. The oil had also better olfactory properties and is thus better suited for being used in perfumery and allied industry.

The oil was found to consist of alpha pinene 27.3 per cent, sabinene 34.0 per cent, dipentene 15.9 per cent, alpha terpineol 7.7 per cent, alpha caryophyllene 6.7 per cent, cadinene 5.2 per cent, and 3.2 per cent unidentified residue.

Costus Root Oil

The isolation of costus oil and its bulk separation into several major fractions by means of column chromatography has been described in an earlier communication. In this paper by G. H. Kulkarni et al. (*P. & E.O.R.* 52: 20, 1961) the results of investigations on the 'Benzene fraction L' and 'Ether fraction M' are being reported.

On careful chromatography 'Benzene Fraction L' was found to consist mostly of dehydrocostus lactone, costunolide and costol.

Preliminary examination of the 'Ether fraction M' indicated the presence of costunolide and a mixture of crystalline alcohols m.p. ca. 135-145°. This fraction was separated into (*a*) petroleum ether soluble fraction; and (*b*) petroleum ether-insoluble fraction. The petroleum ether soluble portion on stagewise cooling afforded costunolide, the mixture of crystalline alcohols, m.p. ca. 135-145° and an oil. The oily fraction on further chromatography furnished: dehydrocostus lactone; the solid alcohol mixture m.p. ca. 135-145°; costol; and a solid alcohol, m.p. 190°. The presence of a guaianolide possibly related to dehydrocostus lactone was also indicated.

The crystalline mixture of alcohols, m.p. 135-145° on careful chromatography initially furnished a solid m.p. 135-6° which gave a monoacetate, $C_{31}H_{52}O_2$, m.p. 124-6°, $[\alpha]_D = -41°$. These data suggested that it was β-sitosterol. When the alcohol mixture m.p. 135-145° was crystallized twice from $CHCl_3$, a white solid alcohol m.p. 154-9° was obtained. On benzoylation it was identified as stigmasteryl benzoate.

The solid alcohol m.p. 190° had the molecular formula $C_{20}H_{30}O_2$. Its U.V. and I.R. spectra indicated the presence of a trisubstituted double bond, a hydroxyl function and a keto group. On acetylation it gave a solid monoacetate, $C_{22}H_{32}O_3$, m.p. 146°.

From the petroleum ether insoluble fraction (B_4) a crystalline alcohol, $C_{30}H_{50}O_2$, m.p. 252° was isolated. Its I.R. spectrum indicated the presence of a hydroxyl group (3360 cm^{-1}) and an exocyclic double bond (1640 cm^{-1} and 878 cm^{-1}). On acetylation it gave an acetate, $C_{34}H_{54}O_4$, m.p. 222°. These observations showed that the solid alcohol m.p. 252° was betulin.

Mango Oil

The plant of *Mangifera indica* belongs to the natural order Anacardiaceae and is indigenous to India. Mango is the par excellence and most delicious of Indian fruits. The ripe fruit is very wholesome and nourishing and contains the vitamins. A, B, C and D. The essential oil from the flowers has now been examined by K. K. Baslas (*P. & E.O.R.* 52: 156, 1961). The oil is obtained by steam distillation of the flowers in 0.04 per cent yield. It possesses the following properties: d^{33} 0.779; $[\alpha]_D^{33}$ + 9°; n_D^{33} 1.4834; acid value 3.9 and ester value 27.6.

Fractional distillation permitted the identification of octene, alpha pinene, beta pinene, alpha phellandrene, limonene, dipentene, citronellal, geraniol, nerol, neryl acetate, and the isolation of a new sesquiterpene alcohol, mangiferol, and a new ketone, mangiferone.

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(Continued from page 516)

of allergy and immunology, the likelihood of important progress developing in our understanding, prevention, and control of eczematous allergic reactions would appear particularly good, if adequate financial support for such basic dermatologic studies were forthcoming. Among the most significant new developments in immunology, which open new avenues of approach to control over antibody production and allergic reactions, have been (1) the elucidation of the phenomenon of specific acquired immunological tolerance and (2) the development of the concept of a natural selection mechanism for antibody formation, especially as based on lymphoid cell clonal selection. Drs. Medawar and Burnet currently received the Nobel prize in medicine for their work in developing these new concepts.

Other areas of great cosmetological importance which have received little or no support for basic dermatologic research include acne, pigmentary disorders, dandruff, and the common problems centering about hair such as early male baldness, the most disturbing increased frequency of sparseness of hair in women, excessive hair growth in areas where not desired, and greying. The achievement of safe and effective control of the problems in these few areas could revolutionize cosmetology, and yet almost no basic work in these areas receives support. Without such research, progress in these areas can scarcely be anticipated.

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PERCUTANEOUS ABSORPTION

(*Continued from page 446*)

The intradermal response can be considered as a direct action on the blood vessels, and the minimum concentration of drug producing erythema in a given skin is used as a standard against which the effect of various concentrations of topically applied drug may be measured.

The data obtained by Stoughton and his colleagues for nicotinic acid and its analoges, as shown in Table 1, enables them to estimate the time of penetration of the various drugs and to correlate the observed differences with the solubility characteristics of the drug under test.

TABLE 1[5]

	Penetration Index*	W/E Part. Coeff.**	Ab. Sol.-H_2O†	Ab.Sol.-Ether‡
Nicotinic acid	1	9.25	24.7 mg. ml.	1.1 mg. ml.
Nicotinic acid	1	45.4	304.2 mg. ml.	.4 mg. ml.
Methyl nicotinate	133	.373	>50%	>50%
Ethyl nicotinate	120	.136	45.9 mg. ml.	>50%
Butyl nicotinate	18	.028	10.7 mg. ml.	>50%
Hexyl nicotinate	27	.012	4.9 mg. ml.	>50%
Octyl nicotinate	2	.032	2.1 mg. ml.	>50%
Tetrahydrofurfuryl nicotinate	29	.394	>50%	>50%

*Relative rates of penetration.
**Water/Ether partition coefficient.
†Absolute solubility in water.
‡Absolute solubility in ether.

The foregoing examples indicate that, in general, *in vivo* studies of penetration through human skin are indirect and not very precise. Probably Stoughton's method could be developed to give precision, if the time taken for a topically applied drug to reach a specific site (the blood vessels) in the skin is measured after application of different concentrations of drugs. It is, however, more limited in application, since few of the drugs likely to be used in cosmetics would produce so distinct a reaction as the nicotinates do.

Nevertheless, the cosmetic industry could probably use the method to determine changes in skin permeability induced by some of their preparations, or even to investigate the efficiency of barrier creams.

Since animal experiments can be made with fewer restrictions than are necessary in the human, better measures of total absorption, or of the distribution of a given drug in various tissues are possible.

A recently published article by Goldzieher and Baker[6] is a good example. These workers investigated the absorption and fate of two radioactive sex hormones (17β-estradiol labeled with tritium in the six and seven positions and progesterone labeled with C^{14}

(*Continued on page 526*)

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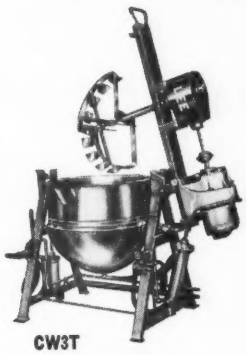

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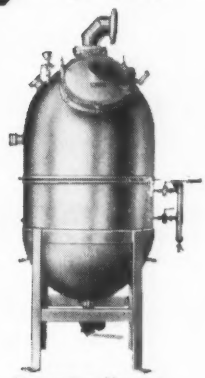

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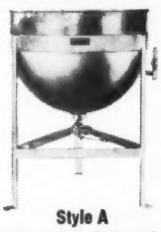

Style A
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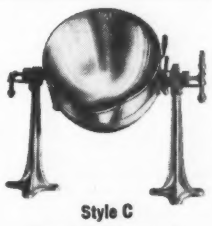

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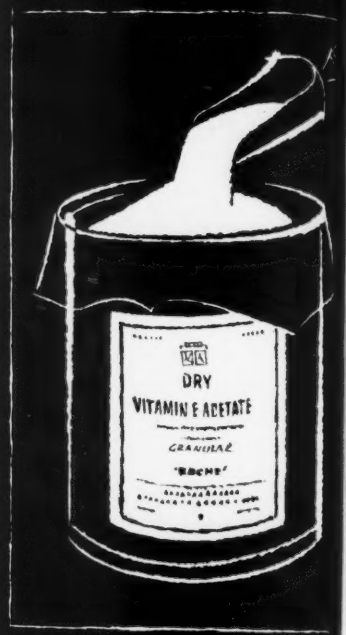

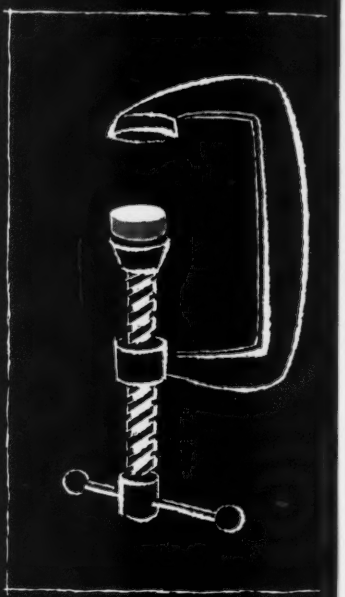

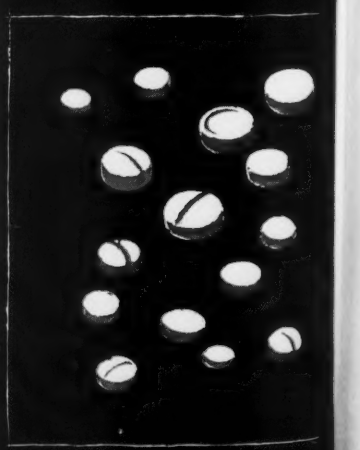

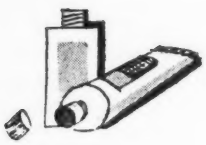

Advancing Therapy

New Steroid Betamethasone

A new corticosteroid, betamethasone (16β-methyl-9α-fluoro-prednisolone; betnelan), has been subjected to a pilot trial in 23 patients by J. H. Glyn and D. B. Fox (*Brit. Med. J.* 1961, 877). In all but one of these it proved to be an effective and extremely potent steroid.

Side-effects commonly associated with steroid therapy do not appear, so far, to be noticeably different with the new steroid. As with other steroids, facial mooning has been seen and there has been increase in appetite and gain in weight. However, with the exception of one case, there was no edema, and in no case has there been any disturbance of serum electrolytes.

Dyspepsia has been much less than with prednisolone, even when this has been given as the enteric-coated preparation.

For practical purposes it appears that 1 mg. of betamethasone is marginally more potent than 1 mg. of dexamethasone, 4 mg. of triamcinolone, or 8 mg. of prednisolone.

Betamethasone is regarded as a useful and effective anti-inflammatory steroid, and as it costs less than equivalent doses of other steroids it constitutes a useful addition to the available steroids.

Antitussives

Nine chemically unrelated preparations were evaluated by P. L. Stefko, J. Denzel, I. Hickey (*J. Pharm. Sci.* 50: 216, 1961) for their cough suppressant activity in the unanesthetized dog, in the anesthetized cat preparations, and on the "pathologic" cough in dogs with an upper respiratory infection.

Dextromethorphan has a cough suppressant effect which is fairly rapid in onset. The potency and duration of action are comparable to codeine, benzonatate, and carbetapentane citrate. Hydrocodone possessed greater antitussive activity.

In the unanesthetized dog preparation oral doses of dextromethorphan, carbetapentane citrate, benzonatate, codeine, and hydrocodone markedly suppressed the cough response; homarylamine hydrochloride and morphine sulfate were moderately active, while caramiphen ethanedisulfonate was inactive. Hydrocodone exhibited side effects at the effective dosage levels.

Dextromethorphane, codeine, hydrocodone, carbetapentane citrate, benzonatate, and B-186 administered orally to the anesthetized cat preparation markedly suppressed the cough attacks; homarylamine hydrochloride and morphine sulfate moderately suppressed the cough attacks; caramiphen ethanedisulfonate was in-active.

Oral doses of dextromethorphan, codeine, and hydrocodone markedly suppressed the "pathologic" cough in the dog, due to an upper respiratory infection; benzonatate, carbetapentane citrate, morphine sulfate, and homarylamine hydrochloride moderately suppressed the cough; caramiphen ethanedisulfonate was inactive.

Penicillin Activity

Antibacterial activity produced in serum and urine by 4 penicillins, including penicillin G intramuscularly injected, were compared by C. G. McCarthy and M. Finland (*N. E. Jour. Med.* 263: 315, 1960) in young men. Oral doses were given both in the fasting state and shortly after breakfast. Activity of the serums was tested against hemolytic Streptococcus, *Staphylococcus aureus* and Type 3 Pneumococcus. By far the greatest activity occurred after intramuscular injection of penicillin G; concentrations at 2 and 5 hours were much higher than those obtained with the fasting doses of phenethicillin. All doses given by mouth produced lower levels of activity in serum and urine and resulted in a smaller proportion recovered from the urine during the first 5 hours, when given shortly after breakfast than when given 2 hours before. Levels in serum were better-sustained when the dose was taken after the meal. Phenylmercaptomethyl penicillin produced the highest levels of activity against the test organisms in serum and urine in spite of the fact that concentrations were lower and a smaller proportion was recovered in the urine as compared with penicillin V or phenethicillin. Penicillin V gave greater activity than phenethicillin against Streptococcus and Pneumococcus, at least equal activity against Staphylococcus and Sarcina in the serum, and equal or greater activity in the urine. A "long acting" tablet of penicillin G produced lower but better-sustained serum levels than any other orally administered penicillin. If various products are to be called penicillin, their activity should be indicated in terms of a standard unit.

Solubilizing Riboflavin

The demonstration of complex formation between riboflavin and caffeine by previous workers suggested that xanthines and related compounds might be suitable as solubilizing agents for the vitamin. Caffeine, theophylline, and dimethyluracil were investigated by D. E. Guttman and M. Y. Atholye (*J. Am. Pharm. Assoc. Sci. Ed.* 49: 687, 1960) and were found to increase the apparent water solubility of riboflavin. The effect was presumably due to the formation of 1:1 complexes. Apparent dissociation constants were determined to be: caffeine, 34.5×10^{-3} mole/L.; theophylline, 52.6×10^{-3} mole/L.; dimethyluracil, 182×10^{-3} mole/L. The marked difference in complexing tendencies between caffeine and dimethyluracil suggested that the imidazole ring of the xanthine nucleus was strongly involved in the interaction.

It is interesting to compare caffeine with other compounds reported in the literature as solubilizers of riboflavin. The solubility of ribo-

flavin in 0.1 M solutions of nicotinamide, vanillin, gallic acid, and acetamidine hydrochloride were interpolated from the data presented in the literature to be $0.66(10)^{-3}$, $0.60(10)^{-3}$, $0.69(10)^{-3}$, and $0.25(10)^{-3}$ moles per liter, respectively. In comparison, the solubility in a solution of caffeine of corresponding concentration was $1.27(10)^{-3}$ moles per liter. It seems probable that structural modifications of the xanthine nucleus might yield compounds with stronger complexing tendencies and thus more pronounced solubilizing action.

Antibiotic Preservatives

Since 1943 antibiotics have been explored for use in preservation of poultry, fish, chilled "red" meats, canned vegetables, fresh vegetables, milk, and baked goods.

Promising results with chlortetracycline and oxytetracycline have led to permission for their commercial use with fish and poultry in Canada and with poultry in the United States. However, commercial control of spoilage bacteria resistant to the tetracyclines is a serious problem.

Further research is needed in several areas according to R. H. Vaughn and G. F. Stewart (*J.A.M.A.* 174: 162, 1960). Perhaps two or more antibiotics can be used at the same time or with a chemical preservative. Consideration also should be given to "terminal" rather than "in-process" application of antibiotics and to development of antibiotics for specific use in food preservation. The latter would not be used with humans or animals, either to control diseases or to influence nutritional responses.

Amino Acid Acidifiers

Intravenous administration of L-arginine monohydrochloride, in combination with a mercurial diuretic, was used by L. I. Gidekel et al (*N. N. Journ. Med.* 263: 221, 1960) in 26 trials in 19 patients who had fluid retention of different etiology that was refractory to mercurial diuretics given alone.

In 20 of 26 trials substantial diuresis was observed with this regimen.

L-arginine monohydrochloride was found to be an effective priming agent for mercurial diuresis. It was well tolerated, safe, easily administered intravenously over a very short period, with markedly prompt "priming" effect. It did not produce a marked acidosis.

L-lysine monohydrochloride in doses of 10 to 40 gm. daily—that is, yielding 50 to 200 milliequiv. of chloride—was studied by R. P. Lasser et al (*N. E. Journ. Med.* 263: 728, 1960) for its efficacy as a chloruretic, acidifying agent for use as a priming agent before mercurial diuresis in 20 patients suffering from fluid retention due to cardiac or liver disease. This agent was found to be highly successful in the production of high concentrations of urinary and serum chloride, with mild acidosis. When given in cold fruit juice or low-sodium milk, it was well tolerated and accepted even by seriously ill patients who were unable to tolerate other acidifying agents. The desired pharmacologic action was thus achieved more readily and with greater predictability than had been observed in previous clinical experience with ammonium chloride.

The only side effects, abdominal cramps and transient diarrhea in an occasional patient, disappeared upon reduction of dose.

The value of a priming course of L-lysine monohydrochloride was most conspicuous in the restoration of diuretic response to mercurial agents in patients with refractory heart failure. It was also useful in the long-term management of patients with recurrent ascites secondary to cardiac disease. No patient with impaired hepatic function was observed to acquire ammonia intoxication in this limited series, and this may constitute a factor of safety by comparison with ammonium chloride though more extensive studies are necessary to establish this observation.

Antitubercular Sulfides

The antitubercular activity of a series of thiols, dithiolans, thiol esters, dimercaptopropyl esters, and episulfides has been examined *in vitro* and *in vivo* in mice infected with the $H_{37}Rv$ strain of *Mycobacterium tuberculosis* by P. Acred and D. M. Brown (*Brit. J. Pharmacol.* 15: 485, 1960). Most of the thiol compounds were inactive, although dimercaprol (2,3-dimercaptopropanol; B.A.L.) and a few closely related compounds showed slight activity *in vivo*, the only exception being 2,3-dimercaptopropyl chloride which was very active. The dithiolans were inactive, but some of the thiol esters were moderately active, in particular 2,3-di(acetylthio)propyl acetate and 1,2,3-tri(acetylthio)propane. The majority of the dimercaptopropyl esters had significant activity, the most active compounds being 2,3-dimercaptopropyl benzoate, 1,3-dimercapto-2-propyl benzoate, 2,3-dimercaptopropyl *o*-chlorobenzoate, and 2,3-dimercaptopropyl *p*-chlorobenzoate. All the *S*-acyl derivatives of 3-mercaptopropylene sulphide had good antitubercular activity, some being more active than streptomycin. The most active compound of the series was 3-(2-furoylthio)propylene sulfide. The activity of the compounds is believed to be due to their conversion *in vivo* to 3-mercaptopropylene sulfide and not due to the formation of ethanethiol. Slight deviation from the basic structure abolishes antitubercular activity.

Methylpentynol Carbamate

V. H. Barnett and M. H. Lloyd (*J. Obstet. Gynaecol.* 67: 652, 1960) have found that methylpentynol carbamate (methylparafynol carbamate) introduces a useful state of cooperation and relaxation when it is given to women in the first stage of labor. It exerts truly remarkable sedative and tranquilizing effects in labor, and a strong amnesic effect is produced. The only comparable drug from this point of view is scopolamine, which carries a grave risk to the fetus. In the authors' experience, methylpentynol carbamate is devoid of such risk. Women who have been given this drug view any subsequent labors without any apprehension whatsoever.

Although the dosage of methylpentynol carbamate required in the first stage of labor is vastly higher than that used for anxiety states in general medicine, the use of this drug seemed to have no adverse effect on the progress of labor or on the third stage. Eight infants showed some degree of sedation for a few hours, but this was not sufficient to give rise to anxiety, and no resuscitation was needed. Early in the study, some women vomited, but this was virtually eliminated when one 25 mg. tablet of promethazine chlorotheophyllinate was taken about 30 minutes prior to the first dose of methylpentynol carbamate.

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(*Continued from page 521*)

in the four position) following application of a hormone ointment to the shaved backs of guinea pigs.

The use of the different isotopes enabled Goldzieher and Baker to determine each hormone separately in samples of tissues taken from the animals after they were sacrificed, as well as in urine collected during the experiment; their data demonstrates a marked difference in the retention of the two hormones by guinea pig skin.

Human experiments carried out in parallel were of course limited to urine analysis, but it was observed that the amount and rate of hormone excretion by the human subjects was much greater than in the case of the guinea pigs.

The authors comment: "These very large differences call for great caution in applying knowledge gained from one species to questions involving another species."

I do not think this point can be too highly stressed, yet it is not to be supposed that animal data are always invalid. This is particularly true with studies on isolated skin when the conditions of the experiment can be strictly controlled.

A very successful system for studying isolated skin has been devised by M. Ainsworth and colleagues at the Chemical Defense Experimental Establishment, Porton, England,[7] and a film made to illustrate it. Pieces of excised skin are placed in a battery of five perfusion cells, one of which is shown diagramatically in FIGURE 3.

Multiple cells of this sort allow several experiments to be carried out at the same time, and a direct comparison between human skin and an animal skin is perfectly feasible.

The cells consist of holes in a stainless steel plate, each hole being closed on the underside of the plate with a concave glass slide cemented in place. The skin sample is clamped over the top of the chamber so formed, and Ringer's solution warmed to 33° C. is passed slowly through the chamber. Serial samples of the effluent are collected in tubes, automatically changed at suitable time intervals.

In use, a minute drop—about 0.003 ml.—of the solution under test is placed on the top surface of the skin, and the amount that passes through the skin in a given time is determined by analysis of the solution in the fraction collector tubes. Usually, radioisotopic methods are used for analysis, but chemical methods can be used in suitable cases.

FIGURE 4 illustrates the type of data obtained by analysis of a continuous series of samples. The curve gives the total amount of substance penetrating the full thickness of skin at any time.

Mathematically, it is of the form

$$A = Kp\ (t\text{-}d + de^{-t/d})$$

A being the total amount penetrating in time t. The constant K depends on the size of the drop, and p is a

permeability constant corresponding to the slope of the linear part of the curve, while d is a delay period which can be obtained from the graph by extrapolation as shown.

Technical criticisms of this method are:

1. The skin may have been removed from the body some time before tests are conducted.
2. The skin does not have a normal circulation.
3. That the substance being tested has to penetrate the full thickness of the skin, whereas *in vivo* it must reach only the papillary capillaries.

Fortunately, it can be shown that the respiration of cold stored skin is vanishingly small and that the permeability of such skin is not appreciably affected by storage for more than 24 hours.[8]

The validity of a given analytical method is always strongly supported if it gives results which can be obtained by different means.

In FIGURE 5, the curve of FIGURE 4 is shown with the addition of five more points. These points match the isolated skin curve better than one has a right to expect, but the real interest lies in the fact that the points represent the degree of inactivation of cholinesterase by percutaneous sarin, with time, as recorded in the table of Griesemer, Blank, and Gould shown in FIGURE 1.

The agreement between workers 3000 miles apart using radically different techniques is astonishing, and of course helps to validate both methods.

To answer the remaining criticisms, the Porton workers have devised an excellent perfused skin flap preparation, which has great potential for fundamental studies, at least.

The pig is usually used as the experimental animal, and the technique involves the removal of an area of skin from the hind leg, complete with its vascular supply and a portion of the saphenous artery and veins. The latter are cannulated so that the skin can be perfused continuously with a serum-saline solution. Labeled compounds are applied to the outer surface of the skin and their quantity in the perfusate determined by analysis of serial samples of effluent.

FIGURE 6 shows the correlation between this method and the surface-loss method when an organo-phosphorus compound was used.

It will be seen that the two curves are identical in shape and nearly so in position, thus justifying the surface-loss method for this substance.

Clearly, these techniques could be of immense value to those doing research into the properties of cosmetics containing powerful drugs.

I would like now to mention the potential value of a somewhat simpler system than skin, for the study of some aspects of "penetration." I refer to the mammalian eye, or more particularly, the system formed by the iris, the anterior chamber and the cornea.

The cornea has the same embryonic origin as the rest of the integument. Like skin, its outer surface is composed of a number of layers of epithelial cells at-

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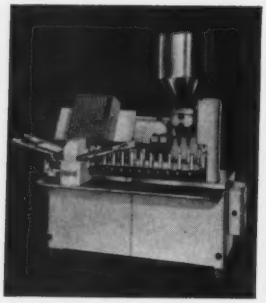

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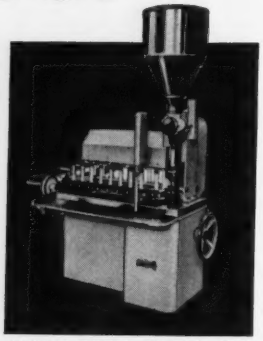

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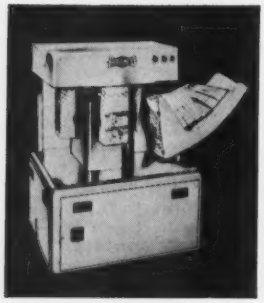

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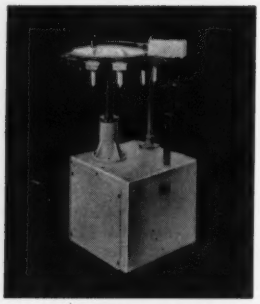

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tached by a basement membrane to a connective tissue support through which run many sensory nerve fibers; but, unlike skin, the cornea has no sweat glands, sebaceous glands, hair follicles, capillary network, or thick stratum corneum and associated "barrier-layer."

These differences from normal skin, though considerable, do not detract from the value of the system as a research tool. Thus, if we accept that the epithelial cells are likely to be functionally similar to skin epithelium in most respects, we can study penetration through this layer without the complications introduced by the other components.

A material applied to the outside of the cornea must pass through both lipoidal and aqueous phases before it can enter the anterior chamber, at which point we can sample the aqueous fluid and, if our methods are good enough, determine how much has passed through in a given time.

In fact, a great deal of experimental data is already available in the ophthalmological literature and much of it could be used in relation to the problems of the cosmetic industry.

Thus, Cogan and Hirsch[9] in 1944 reported some excellent work on the permeability of the cornea to weak electrolytes and the dependence of the permeability function on *p*H, while Swan and White[10] two years earlier, had already demonstrated how chemical structure and phase solubilities can determine corneal permeability. Indeed, their conclusions are in line with those of Stoughton, *et al.*, mentioned earlier in this paper.

In my own work on permeability, I use the rat eye extensively, but in a way different from earlier workers. Advantage is taken of the fact that the iris muscle, continuously bathed in anterior chamber fluid, is innervated by both sympathetic and parasympathetic nerves and thus is sensitive to very low concentrations of anticholinesterases or their antagonists, the belladonna alkaloids. The iris muscle, then, can be used as a very good indicator of the amount of these agents that penetrates the cornea in a given time and it becomes unnecessary to puncture the cornea to remove fluid for analysis. In practice, a small glass cup is fitted to the eye of an anaesthetized rat and is filled with a solution of the drug in physiological saline. As the drug penetrates the cornea and reaches the iris, the latter changes in size and these changes can be measured with a low-power microscope.

Groups of rats are used, and the change of pupil area with time is recorded for each concentration of drug. Finally, the logarithm of the time taken for the pupil to reach 50 per cent of its maximum area is plotted against the logarithm of the concentration of drug, in this case atropine.

The curve obtained (FIGURE 7, curve A) is similar in form to that obtained by the perfused skin technique and shows the same kind of delay before the drug begins to affect the iris.

The slope of the linear part of the curve is a meas-

ure of the rate of penetration of the drug, so that one can show, for instance, how a change of *p*H—and hence of the degree of dissociation—of the weak base affects the penetration rate.

The analysis can, however, be carried much further because one can easily strip the epithelium off the substantia propria by applying a drop of hot water (65° C.) to the cornea.

If a group of animals is prepared in this way, a second response curve (FIGURE 7, curve B) can be obtained and a measure of the effect of the epithelium on drug transfer obtained by difference.

Finally, a third experiment can be made in which the drug is continuously injected directly into the anterior chamber, bypassing the cornea altogether. This is a more difficult technique, but with some practice it can be done successfully.

From the set of curves so produced, the influence of each major corneal component can be deduced with surprisingly good precision.

I believe that this system could be of considerable value to the cosmetic industry in its more fundamental researches. For instance, it would enable one to study rather easily the influence of surfactants on penetration of epithelium.

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PATENTS AND TRADEMARKS

(*Continued from page 467*)

core, no deleterious reaction occurs between the complex aluminum salt and the sensitive perfume ingredients. Also, by incorporating the soap-compatible skin antiseptic in the cologne stick body and not in the antiperspirant core, any incompatibility between the complex aluminum salt and the deodorant ingredient are avoided. Also, the stick can be wrapped in aluminum foil without corrosion problems since the antiperspirant complex aluminum salt is isolated in the core.

"The following example of preparation of an unperfumed antiperspirant core surrounded by a larger deodorant cologne stick body illustrates my invention.

"The antiperspirant core was prepared as follows:

Part A—	Gms.
40 per cent w./w. sodium aluminum chlorhydroxy lactate in water	60.00
Water	6.00
Alcohol (SDA Formula No. 40)	22.00

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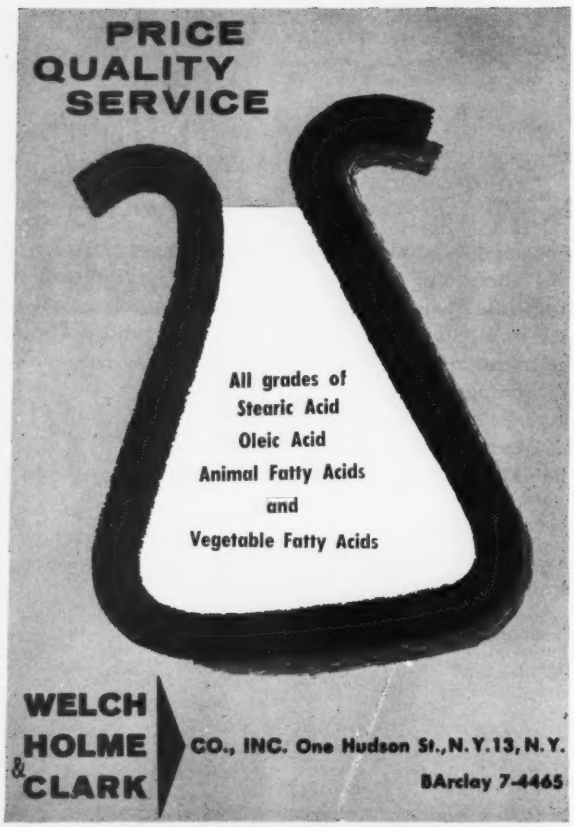

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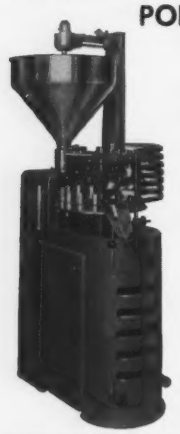

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Part B—

70 per cent sorbitol solution N.F.	3.00
Isopropyl myristate	1.00
Stearyl alcohol	1.50
Sodium stearate	6.50

"Part A was heated to 60° C. and Part B was then added and the mixture heated with agitation (without loss of alcohol) until clear. The mixture was poured at 60° C. into cylindrical molds of suitable size, i.e., ¾ inch in diameter. The material was removed from the molds when cool and solidified and one core was placed in the center of each cavity of a larger chilled cologne stick mold i.e., 1 7/16 inches in diameter.

"The deodorant stick body was prepared as follows:

	Gms.
Alcohol (SDA No. 40)	83.00
Sodium stearate	7.00
Hexachlorophene	0.50
Water	5.00
Propylene glycol	3.00
Perfume compound	1.50

"All ingredients were heated together with agitation in a closed vessel fitted with a reflux condenser until clear. The mixture was poured at 65° to 70° C. into the chilled mold containing an antiperspirant core in each cavity. The material was removed from the molds when cool, wrapped in aluminum foil and packaged in air-tight containers. The resulting solid stick comprised the unperfumed antiperspirant core surrounded by the solid larger deodorant cologne stick body."

RECENT PATENTS

2,970,053—Chas. Pfizer & Co., Inc. — Oleandomycin Resin Adsorbate.

2,970,081—Monsanto—Mycobacteriostats.

2,970,082—Walker Laboratories, Inc.—Aluminum Nicotinate Compositions For Hypercholesteremia.

2,970,083—Chesebrough-Pond's, Inc.—Two Phase Deodorant-Antiperspirant Stick.

2,970,139—Robert Duschinsky et al. — 5-Fluorouracil Nucleotides.

2,970,143—Olin Mathieson—9α-Alkyl Steroids.

2,970,144—Smith, Kline & French Labs.—Esters of 9-Alkyl-3-Oxa And 3-Thia-9-Azabicyclo [3. 3. 1]-Nonan-7-Ol.

2,970,145—Rohm & Haas—Aminoacetamidoximic Quaternary Ammonium Compounds.

2,970,147—Hoffmann-La Roche—3-Hydroxy-N-(Heterocyclic-Ethyl) Morphinans.

2,970,148 — Hoffmann-La Roche — 1-Isonicotinyl-2-Veratrylidene Hydrazine.

2,970,149—Ciba—Certain 1-[(2-Pyridyl)-Lower Alkyl]-2-(Tert-Amino-Lower Alkyl)-Indan-1-Ols.

2,970,152—Hoffmann-La Roche — Anilinobenzoquinone Derivatives.

2,970,153—Aktiebolaget Leo (Sweden)—Alkoxyphenyl-Propionyl Esters of 17α-Hydroxyprogesterone.

2,970,155—Les Laboratoires Francais de Chimiotherapie (France)—16α-Methyl-17α-Hydroxy-Δ^9-Pregnene-3, 20-Dione.

2,970,156—Upjohn — 6-Alpha-Methyl-21-Methoxy-Progesterones.

2,970,159—Hoffmann-La Roche—Hydrazine Derivatives.

2,970,161—American Cyanamid — 6-8-Dihalo Octanoic Acid Esters.

2,970,174—Hoffmann-La Roche—1, 1, 3-Tri-Lower Alkoxy-4-Methyl-4-Hepten-6-Yne.

2,970,943—Eli Lilly—Valacidin and Processes for the Preparation Thereof.

2,970,944—Merck—Parenteral Solutions of Steroid Phosphates Stabilized with Creatinines.

2,970,945—Miles Laboratories—Diagnostic Composition.

2,970,995—General Mills—Reductive Acylated Products of Riboflavin.

2,970,999—W. R. Grace — N-Aminoemetinium Compounds.

2,971,001—Wm. S. Merrell Company—Quaternary Salts of Triphenylethanols, -Ethylenes, and -Ethanes.

2,971,002—Rohm & Haas—N-Alkoxy Quaternary Heterocyclic Alkyl Sulfate Salts.

2,971,003—Charles E. Frosst & Co.—2, 2,-Dialkyl-4-(Pyridyl Ethyl)-Tetrahydrofuran-4-Methyl Carbamate.

2,971,004—Commercial Solvents Corp. — Substituted Cycloserines.

2,971,005—Merck — N-Substituted Derivatives of 2-Benzyl-Aminobenzimidazoles.

2,971,006—General Aniline & Film Corporation — 1-(Alkyl or -Hydroxyalkyl)-1-(2-Propynyl)-2-Alkylimidazolinium Halides.

2,971,007—Bristol-Myers Company — N-(9-Xanthyl) Tetracyclines.

2,971,008—G. D. Searle—1, 12-Dimethyl-6-Hydroxy-7-(β-Carboxyalkenyl)-1, 2, 3, 4, 9, 10, 11, 12-Octahydrophenanthrene-1-Carboxylic Acid Esters.

2,971,009—G. D. Searle—3, 7-Dioxygenated 3a-Methyl-3-Benz [e] Indanecarboxylic Acids and Lactones.

2,971,018—Seymour L. Shapiro et al. — Quaternary Ammonium Salts of (2-Diethylamino-1-Phenylethyl) Benzoates.

2,971,021—Ethicon, Inc.—1-Amino-1-Carboalkoxycyclohexanes.

2,971,855—U. S. A.—Polymeric Composition Containing Fatty Acid Derivative or Morpholine.

2,971,886—Upjohn — 1-Dehydro-17-Hydroxyprogesterone Acylates.

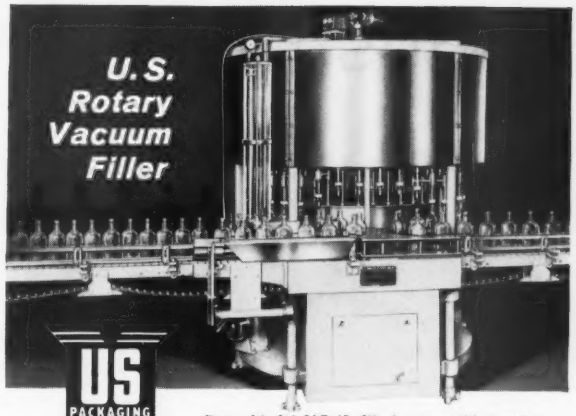
2,971,887—Frank W. Horner, Limited—Inhibition of Isoniazid Acetylation.

2,971,888—Chemo Puro Mfg. Corp. — Concentrated, Stable Aqueous Solutions of Diethoxy-(Diethoxybenzyl) Isoquinoline Hydrochloride.

2,971,920—Gabriele Wurmbock et al.—Finger Nail Polish Remover.

2,971,955—Abbott Labs. — Cyclohexylcarbinol Derivatives of Piperazine.

(Continued on page 538)



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Industry's Books . . .

Modern Drug Encyclopedia and Therapeutic Index, *edited by Harry D. Fein, M.D., F.A.C.P., Assistant Professor of Clinical Medicine, New York College of Medicine, Eighth Edition, 1649 pp., The Reuben H. Donnelley Corp., New York, (1961), cloth,* **$17.50,** *including monthly supplements.*

Describing the principal ethical products of 125 manufacturers who distribute nationally, this standard drug reference is the largest and most complete published. Over 2000 changes, additions, and deletions were made in compiling this new edition. Complete with general, therapeutic and generic as well as manufacturer's indexes, Modern Drug Encyclopedia is now published every two years and kept up-to-date by a monthly supplement, Modern Drugs, cumulatively indexing descriptive and product brochures of all new ethical drug products. This service is now in its twenty-sixth year of publication. Purchasers of the Encyclopedia receive the supplement service over the two full years—24 issues.

Advances in Biology of Skin, Vol. I —Cutaneous Innervation, *edited by William Montagna, Arnold Biological Laboratory, Brown University, 203 pp., illus., Pergamon Press, New York, (1960), cloth,* **$10.**

The material in this book was presented at the Symposium on The Biology of Skin, held at Brown University. Over the years the symposia have covered a variety of subjects dealing with the biology of skin, but this is the first published record of these proceedings. The nine chapters herein present the structure and histochemical characterists of cutaneous nerves and end organs. They discuss the central patterns of afferent impulses from the skin, which allow sensations; review the newest knowledge of the mechanisms of common sensitivity; and discuss the possible processes involved in the sensation of itch and pain. The aim of the book is to present concisely, in straightforward language, all that is known about the structure and function of cutaneous innervation.

Tobacco—Experimental And Clinical Studies (A Comprehensive Account of the World Literature), *by P. S. Larson, Ph.D., H. B. Haag, M.D., and H. Silvette, Ph.D., Medical College of Virginia, 932 pp., 8½" x 11", The Williams & Wilkins Co., Baltimore (1961), cloth,* **$20.**

The information gathered in this monograph has been compiled from more than 6000 articles published in some 1200 journals, up to and largely into the year 1959. These have been read and analytically abstracted during a cumulative total of some 50 years' interest of the authors in the biological and medical effects of tobacco. Although the resultant monograph is primarily directed to research workers and specialists in a wide variety of fields, readers with broad interests, and particularly physicians, will find many of the sections of the book of much value and appeal. The clinical chapters alone, of this tremendous monograph, comprise a considerable portion of the text.

American Drug Index 1961, *by Charles O. Wilson, Ph.D., Dean and Professor of Pharmaceutical Chemistry, School of Pharmacy, Oregon State College, and Tony Everett Jones, Ph.D., Associate Professor of Pharmaceutical Chemistry, School of Pharmacy, University of Colorado, 791 pp., (1961), J. B. Lippincott Co., Phila., cloth,* **$6.75.**

The American Drug Index has been prepared for the identification and correlation of the many pharmaceuticals available to the medical and allied professions. All names used for a pharmaceutical occur in alphabetical order with the pertinent data given under the brand name and the name by which it is made available. Data included are generic names, chemical names, manufacturer, pharmaceutical forms, size, dosage, and use. Generic names occur in alphabetical order, and here the recognition of the drug is indicated by U.S.P., N.F., N.N.D., and A.D.R. The information is in accord with the latest editions of these books: U.S.P. XVI, N.F. Xl, N.N.D. 1960, and A.D.R. 1960.

The Biochemistry of the Nucleic Acids, *by J. N. Davidson, M.D., Gardiner Professor of Biochemistry in the University of Glasgow, 288 pages, pocket size, John Wiley & Sons, Inc., New York, cloth,* **$4.25.**

This is the fourth edition of this work, being entirely reset and brought up to date. The first edition appeared in 1950. The fact that a fourth edition is required only ten years later is an indication of the rapidity of the advance in this field and of the great interest in nucleic acids which has been shown during the last decade by both chemists and biologists. It is intended to provide an elementary outline of the main features of the nucleic acids and nucleoproteins for the benefit of students of biochemistry, of chemists who wish to know something about the biological aspects of the subject, and of biologists who wish to learn a little about the chemical aspects of the subject.

Medicine Makers Of Kalamazoo, *by Leonard Engel, 261 pp., McGraw-Hill Book Co., Inc., New York, (1961), cloth,* **$4.50.**

This book presents a unique survey of Upjohn's first three-quarters of a century in the ethical drug field, and of its effect on the history and progress of medicine in that period. It is an absorbing history of the pharmaceutical industry, stressing its growth cycle of research, discovery, distribution, "plowback" of profits for new research, and the like, seen through the product development of a typical drug firm.

The book tells the interesting facts behind Upjohn's first profitable specialty, the friable pill, and its later entries in the drug field, Phenolax and Citrocarbonate. It describes how these successful drugs helped the company develop its vitamin preparations, and how they, in turn, paid for a long list of research developments before and after World War II, including the anticoagulant heparin, Gelfoam (an absorbable sponge used in surgery), penicillin, and hormone products. Here also is the fascinating, behind-the-scenes story of the discovery of Albamycin, an antibiotic highly effective against the staphylococcus microbe, the development of the cortisone-type drug Medrol, and the introduction of Orinase, a significant breakthrough in the treatment of diabetes.

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Skin Research

Visualizing Perspiration

Of the several methods for estimating the distribution and activity of the eccrine sweat glands which utilize the starch-iodine reaction, the technic of Randall, and Wada are the simplest. In the former procedure, direct prints of the sweat pattern are made by pressing starch containing bond paper against an iodine treated test site. One looks at the paper not the skin for the result. The droplets are not seen as they form. The print is a static representation. Moreover, evaporation of tiny droplets and fusion of larger ones before "printing" are disadvantages. Wada's method, on the other hand, permits detailed visualization of the unfolding pattern of sweat formation. In this technic, castor oil, as a vehicle for suspended starch, serves to trap the accumulating sweat. The entrapped droplets are then seen as discrete, enlarging blue-black puncta. One can directly watch the dynamics of sweat formation on the skin itself but no permanent record is afforded for later study. When bond paper is applied to these areas, only meaningless smudges are obtained. Aside from the expense, photographs do not give the desired clarity because of light scattering from the oily surface.

The best features of the above procedures are combined by C. Papa and A. M. Kligman (*J. Invest. Dermatol.* 36: 167, 1961) in the following technic whereby permanent prints can be obtained after direct observation of the forming globules of sweat.

A 3 per cent solution of iodine and potassium iodide in 95 per cent ethanol is swabbed on the skin site to be tested and allowed to dry. A thin, even film of starch-castor oil mixture (50 gm. starch and 100 ml. castor oil) is applied with a paint brush. Sweating is then initiated. After studying the pattern, before the droplets coalesce, a piece of non-embossed, absorbent paper towelling (the common, semi-rough, light brown type usually found in rolls or dispensers in the household or laboratory) is smoothed over the test site and then gently peeled from the skin. If thermal stimulation has been employed, clearer prints will be obtained if the subject is cooled at room temperature for a minute or so. The record may then be permanently preserved by coating the surface with a clear plastic aerosol spray.

The method is effective largely because the soft, thick towelling rapidly absorbs oil by capillarity. Moreover, the towelling is flexible enough to be molded into areas of irregular contour such as the axilla where snappy prints are next to impossible to obtain on bond paper with Randall's technic.

Human Epidermis

Since the introduction of the electron microscope there have been a series of improvements in both the microscope and in the technics of preparing the tissue. These have resulted in its present accuracy and widespread use in the biomedical field. The electron microscope has increased resolving power attainable in sections from the previous limit of 2,000 Angstroms with the light microscope to the present limit of 20 Angstroms. In so doing, it has led to a description of many previously unseen structures, and thus to much new terminology in the field of anatomy. Many concepts on structure have had to be revised and many others have been upheld and extended by this new visual aid.

In the case of skin, the study of fine structure, or that anatomy seen with the electron microscope, has been developed over the past ten years. Most of the earlier workers were handicapped by relatively poor fixatives, embedding media and sectioning methods. These have improved remarkably in the past few years and have resulted in a clearer understanding of the fine structure of normal human epidermis.

The present work was undertaken by A. S. Zelickson and J. F. Hartmann (*J. Invest. Dermatol.* 36: 65, 1961) in the hope of providing additional information on the fine structure of normal human epidermis. It was considered especially desirable to take advantage of the increased resolution attained recently, in sections using a polyester (Vestopal W) as an embedding medium.

The normal human epidermis appears to be delimited from the dermis by a membrane, fibrillar in nature, which runs parallel with and adjoins the underside of the epidermis. It is conceivable that this membrane plays a part in protecting the epidermal cells from invasion from below and likewise protects the dermis against invasion from above. The possibility that it functions as a structure in the cohesion between epidermis and dermis is also likely. The basal cells send multiple projections into the dermis. These, too, appear to play a part in attaching the epidermis to the dermis. Vesicles are often seen in these pegs and it is possible that they play a part in the transfer of materials to and from the epidermis. Double-walled vesicles have been noted just inside the cell membrane as if a villous process from one cell had been projected into the cytoplasm of its neighbor and then pinched off.

The basal cells seemingly have relatively straight lateral borders and are attached to one another by the desmosomes. Though the borders appear straight, numerous foldings of the cell membrane are squeezed against each adjacent cell. This occurs between desmosomes and is due to the closeness of neighboring cells.

In the basal layer numerous and regularly oriented tonofibrils lie perpendicular to the surface of the skin. As the cell moves toward the stratum corneum these tonofibrils become arranged parallel to the surface, and most likely play an integral role in the process of keratinization.

The force holding together all epi-

dermal cells is the desmosome. The desmosomes are closer together in the stratum granulosum, due to the new shape of the cell. These remain intact throughout the passage of the cell from the basal cell layer to the surface, and tend to undergo keratinization with the rest of the cell. When they finally break, the cell is shed.

As the cell continues its movement upward, the vital cytoplasmic organelles begin to decrease in number, probably due to the decreased activity of the cell and its beginning degeneration.

At the lower level of the stratum corneum a moth-eaten-appearing cell layer is noted. This layer, easily recognizable in electron micrographs, most likely represents the stratum lucidum, which often is not visible with the light microscope, but in essence is always present. The stratum corneum varies in thickness depending on the region from which the tissue was taken.

Topical Steroid Formulation

Three types of ointment bases can be used with steroids, according to R. E. Collard (*Pharm. J.* 1961, p. 113)—an anhydrous greasy base, an emulsion base and a hydrophilic base. For the greasy base, white petrolatum serves as a good foundation and many of its undesirable features such as stickiness and "drag" can be overcome by the addition of mineral oil and lanolin. If an anhydrous emulsifiable base is wanted, the inclusion of 10 per cent of emulsifying wax or cetomacrogol emulsifying wax will prove satisfactory. Among the agents which have been found suitable for incorporation in a greasy base are: mineral oil, petrolatum, paraffin, beeswax, cetostearyl alcohol glyceryl monosterate, isopropyl myristate, lanolin, spermaceti, ceresin and cocobutter.

The emulsion bases employed are usually of the oil-in-water type. The following common emulsifying and stabilizing agents are considered suitable for use in emulsion bases intended for use with the insoluble esters: Sodium lauryl sulfate, cetomacrogol 1000, triethanolamine stearate, polyoxyethylene sorbitan monooleate, sorbitan monooleate, polyoxyethylene monostearate, diglycol stearate, glyceryl monostearate, lecithin and cetostearyl alcohol. A mixture of methyl and propyl hydroxybenzoates constitutes a satisfactory preservative.

The hydrophilic base is essentially a blend of glycols—propylene glycol being usually blended with one or more polyethylene glycols to give a product of suitable consistency. The texture and "feel" of such a simple mixture can often be modified by the inclusion of a small quantity of cetyl alcohol, water or zinc stearate. A hydrophilic base containing no water is a suitable vehicle for the easily hydrolyzed steroid esters.

The ointments are made by distributing the corticosteroid in a suitable ingredient of the base or in a portion of the molten base itself, adding the mixture to the remainder, mixing, and finally passing through a suitable machine, such as a colloid mill, to ensure complete dispersion of the steroid. Since micro-fine material should always be used, a final milling is not necessary.

The lotion is probably the most economical preparation for topical use. However, such a product is not easy to formulate since it must be designed to "stay put" immediately after application and yet spread easily. Lotions of the corticosteroids may be produced in two ways—the materials can be dissolved in a suitable solvent and thickening agents added if necessary, or they can be suspended in a suitable vehicle. If simple aqueous solutions are wanted, only the phosphate esters can be used and the solutions must be buffered at *p*H 7. In passing, it may be noted that some steroids, such as testosterone and cortisone acetate, are capable of forming water-soluble complexes with sodium salicylate. This property does not seem to have been successfully applied in the formulation of a topical preparation, however. If an aqueous solution is not essential, hydrocortisone and prednisolone can be dissolved in glycols. A 2.5 per cent solution of hydrocortisone can be made in polyethylene glycol 300 and a 2.5 per cent solution of prednisolone in either propylene glycol or polyethylene glycol 300. The free alcohols are used instead of the acetate esters because of their greater solubility. If a suspension is desired, aqueous dispersions of natural gums (tragacanth) or of synthetic agents (methylcellulose) can be used as vehicles, as can conventional oily mixtures (such as those based on mineral oil). None of these is as cosmetically acceptable as an oil-in-water emulsion, however. Several satisfactory formulas for such emulsions have been suggested and the folowing is suggested as a starting point:

Hydrocortisone alcohol	1.0
Methyl hydroxybenzoate	0.15
Propyl hydroxybenzoate	0.05
Cetomacrogol 1000	0.5
Isopropyl myristate	2.0
Self-emulsifying monostearin	5.0
Propylene glycol	5.0
Water to	100.0

The manufacturing techniques for lotions are straightforward when they are solutions or simple suspensions. If an emulsion base is used, an aqueous slurry of the steroid can be mixed with a "concentrate" of the emulsion, and the mixture homogenized when completely cold—preferably after standing for 24 hours.

Profuse Sweating

As a result of consecutive daily episodes of profuse sweating, the human eccrine sweat gland undergoes three major types of cytologic change which occur more or less simultaneously according to R. L. Dobson (*J. Invest. Dermatol.* 35:, 195 1960). The first, *degeneration*, affects mainly the large pale cells and consists of atrophy, vacuolization, fusion of adjacent cells, and pyknosis of nuclei.

Adaptation is the second type of change. After the initial loss of glycogen has occurred on the first day of sweating, the large pale cells reacquire glycogen and do not lose it despite the 6 hour period of profuse sweating. In addition, once the duct has regained its glycogen no further loss of glycogen with sweating occurs.

Restoration is the third type of change observed. Despite degenerative and adaptive changes, a considerable degree of recovery from the effects of the first episode of sweating takes place. Restoration follows a pattern similar to that observed after a single episode of profuse sweating. In both instances, glycogen reappears in the secretory coil within 18 hours after the first episode of sweating, in the basal cell of the duct within 48 hours and in the luminal cell of the duct within 72 hours.

Behind The Markets

ESSENTIAL OILS

Acutely aware of the present state of the nation's economy, buyers continue their tight inventory policy. Although price trends continue downward, a firm undertone was generally reported.

Reports continue to be noted here regarding new sources of essential oils. A Department of Commerce release reveals that a manufacturing facility in Kuturgharbieh, Egypt, produced 616 pounds of essential oils last year. Incidentally, a plant in Tanta will produce 1,800 metric tons of commercial glycerine and 600 tons of medicinal glycerine.

A new large-scale source of essential oils may be the Federation of Rhodesia and Nyasaland. Studies recently begun indicate that the countries could produce the oil. The Federation may enter some phases of the essential oils market within the next year or so, and trade sources there have their eye on capturing about 10 per cent of the West's total market in from five to ten years.

Of the main oils that can be produced in the Federation, rose, geranium, and lavender are particularly suited to the region; basil, sage, thyme, marjoram, and rosemary are also strong possibilities. According to the studies so far, the oils are equal in quality to those produced in India and the Mediterranean countries.

The eucalyptus oil industry at Sukan, East Java, continues to expand at a slow but steady rate. The processing plant in 1959 produced 48,906 liters of oil and expects to increase production by 10 per cent in 1960.

DRUGS AND FINE CHEMICALS

A seasonal slowdown was characteristic of this market. Competition is keen, buying for short time in small lots with profit margins narrow.

Less foreign demand is bound to result sooner or later, as traditional buyer nations become self-sufficient in drugs. India, for example, is expanding its production steadily with United States concerns necessarily participating in these expansions.

In December, for the third consecutive month, Taiwan was the principal source of U. S. menthol imports. Of total shipments amounting to 83,267 pounds, Formosan material accounted for 41,490 pounds. Japan, for many years the leading supplier of natural menthol, supplied only 7,905 pounds.

BOTANICALS

This market was characterized by a price strength in agar-agar, reflecting a short crop and higher replacement costs.

Collection of botanicals in the southern states of Virginia, West Virginia, and Kentucky has been anything but satisfactory for some time now, and the likelyhood of improvement is remote. Collectors are no longer interested, since the industrialization of the area by textile plants, Oak Ridge, and the Tennessee Valley Authority supply jobs at high wages and steady employment. Collection has always been more or less a family affair by natives of this area when they had little or nothing else to do. A change in this situation is not likely in the near future.

CEDARWOOD

Lebanon, world famous for its historical cedarwood trees, is no longer a source of supply for cedarwood oil, since the trees are now protected by legislation. This is of passing interest only, since cedarwood oil is produced commercially in many areas of the world, namely, Morocco, the mountains of Himalaya, Afghanistan, and Pakistan, East Africa and, of course, the southern United States, principally Texas and Virginia. Production in East Africa is impressive, amounting to 55 to 100 metric tons annually, but this goes mostly to the United Kingdom.

Texas and Virginia, however, supply the domestic demand here to the extent of up to 300 tons annually. This production has been declining during the past few years, with the result that dealers report very few offerings and spot prices have advanced from 55 cents per pound in 1952 to somewhat better than $1.00 a pound last year. This development can be explained.

Before World War I, most commercial cedarwood oil was produced by manufacturers of cedar pencil slats, which required old trees with few knots. Early in this century, most of these old trees had been cut, and reforestration was not undertaken.

Next, the pencil slat manufacturers started buying up old cedar fence rails and even old log cabins that had been built a generation or two before. This wood, while satisfactory for pencil slats, was almost totally useless for cedarwood oil. The sapwood had practically disappeared and the wood had been exposed to all kinds of weather for more than 50 years.

At about this time the oil distillers began producing oil from the sawdust of recently cut trees for use in cedar chests and the like. These trees contained a good many knots and the grain was twisted, making them useless for pencil slats. According to the pencil slat manufacturers, moreover, the oil was inferior; actually it had to be sold at a discount.

The old rail fences and log cabins were being used up, and the cedar slat business was gradually disappearing; it is now so small a business that there is little sawdust, and cedar is not the only wood used.

Nowadays cedarwood oil is distilled largely from shavings left over from the manufacture of such products as cedar chests from the wood from young trees.

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(*Continued from page 531*)

2,971,956—Upjohn — Beta-(Cyclic Amino)-Alpha-Hydroxy-Alkanals.

2,971,961—Upjohn—Spiro (Cycloalkylpyrrolidyl)-α, α-Diphenyl Alkanoamides.

2,971,973—American Home Products—N-Benzhydryl-O-Alkylpseudoureas.

2,972,528—Imperial Chemical Industries Limited—Dipyridyl Derivatives.

2,972,547—Antioch College—Acyl Hydrazine Compositions.

2,972,564—A/B Kabi, Stockholm—3-Methyl-3-Pentanol Carbamate Compositions Having Muscle Relaxing and Tranquilizing Action.

2,972,565—Tennessee Research Corp.—Fat Composition.

2,972,568—Ciba—Process for the Microbiological Reduction Of Steroids with Streptomyces.

2,972,569—Abbott Labs. — Hortesin, an Antifungal Agent Derived from Streptomyces Versipellis.

2,972,582—Donald H. Powers et al.—Cosmetic Detergent Composition.

2,972,610—Olin Mathieson — 9α-Halo-21-Aldo-Steroids of the Pregnane Series.

2,972,612—Societe des Usines Chimiques Rhone-Poulenc (France)—Phenthiazine Compounds.

2,972,613—Dawe's Labs.—Cyclic Choline Xanthate.

2,972,623—G. D. Searle—17-Oxygenated-18, 19-Dinorandrost-4-En-3-Ones.

2,972,630—Chas. Pfizer—Tetracycline Derivative.

2,973,298—Vineland Poultry Labs.—Sulfonamide Drug and Terephthalic Acid Composition.

2,973,299—John M. Coffin—Treating Infectious Synovitis with Brilliant Green.

2,973,301—Lloyd Brother, Inc.—Soft Gelatin Capsule.

2,973,354—Ciba—N-Substituted Morphanthridine Compounds.

2,973,356—Olin Mathieson—21-Fluoro-9α-Halo-Steroids of the Pregnane Series.

2,973,357—Wisconsin Alumni Research Foundation—Total Synthesis of Aldosterone and Intermediates therein.

2,973,358—J. R. Geigy—4, 5, 6, 7-Tetrachloro-3-Imino-Isoindoline-1-One Derivatives.

2,973,359—Upjohn—8-Chlorolloxazine-5, 10-Dioxide.

2,973,360—Paul A. J. Janssen—Certain 1-(2-Theonyl Lower Alkyl)-4-(Heterocyclic Substituted)-Piperazines.

2,973,361—W. R. Grace—Triethylenediamine Hydrazinium Compounds.

2,973,363—Paul Adriaan J. Janssen — 1-(2-Thenoyl) Alkyl-4-Arylpiperidin-4-Ols.

2,973,364—Paul Adriaan J. Janssen — 1-(2-Thenoyl) Alkyl-4-Aryl-1, 2, 3, 6-Tetrahydropyridines.

2,973,365—Paul Adriaan J. Janssen — 1-Aroylalkyl-4-Aryl-1, 2, 3, 6-Tetrahydro-Pyridines.

2,973,367—Eli Lilly—Pyrazole Carbinols.

2,973,368—The Geschickter Fund for Medical Research Inc. — 3-Azabicyclo [3:2:0] Heptane and Derivatives Thereof.

2,973,369—J. R. Geigy A.-G—3, 3-Dichloro-Isoindolinones.

2,973,370—G. D. Searle—17β-Hydroxy-4-Oxaandrostan-3-Ones.
2,973,375—Merck — 12α-Halo-11, 21-Bis-Oxygenated-1, 4-Pregnadiene-3, 20-Diones.
2,973,376—Olin Mathieson — 11-Oxygenated-2-Methyl-21-Fluoro Progesterone Derivatives.
2,973,377—Olin Mathieson—11β-12β-Epoxy and 12α-Bromo Steroids of The pregnane series and their method of Preparation.
2,973,378—Syntex S. A.—Allopregnan-3β, 11α-Diol Derivatives.
2,974,084—General Aniline & Film Corp.—α-Halogenated-γ-Butyrolactones as Nematocides.
2,974,087—Merck—1-Methyl-4-Nitro-5-Cyano-Imidazole Compositions for Treating Coccidiosis.
2,974,089—Revlon, Inc.—Sun Screen Compositions.
2,974,136—Lovens Kemiske Fabrik ved A. Konsted (Denmark)—Penicillin Salts.
2,974,137—American Cyanamid — N^4-(Benz-Or Anisylidene)-N^1-(6-Methoxy-3-Pyridazinyl)-Sulfanilamides.
2,974,138—G. D. Searle—18, 20-Epoxypregnanes.
2,974,139—Deutsche Goldund Silber-Scheideanstalt vormals Roessler (Germany)—Thiophenylpyridyl Amines.
2,974,140—Miles Labs. — Substituted 2-Alkenyltetrahydro-1, 3-Oxazines.
2,974,142—Hoffmann-La Roche — Morphinan Derivatives.
2,974,143—Hoffmann-La Roche — Dibenzo [de, g] Quinoline Compounds.
2,974,146—Lakeside Labs., Inc.—3-Piperidyl Benzhydryl ethers.
2,974,148—Smith Kline & French Labs.—Anorexigenic Preparation and Method of Curbing the Appetite.
2,974,151—G. D. Searle—6-Alkylidenestra-1, 3, 5(10)-Triene-3, 17β-Diols.
2,974,166—Hoffmann-La Roche—Certain 1-Arylsulfonyl-3-(Cis-2-Decalyl) Ureas.

DESIGNING COTY'S PACKAGES

(Continued from page 451)

bag; they are far less breakable than glass, which is most valuable for products used in the bathroom where curious children, slippery hands, tubs, sinks, and tile floors are all hazards. Plastics also afford opportunities for new and unusual effects either impossible or far too expensive in other materials, and Mr. de Kolb is eager for new and unusual designs, provided they are a real convenience to the consumer.

Plastics do reduce costs in some respects, but at present not sufficiently to make a great difference, according to Mr. de Kolb. Plastics rather than metal for caps, lipsticks, and compacts are definitely less expensive. But plastic containers are not yet cheaper than glass bottles, although they break less frequently, saving production time and costs.

The most serious problem Mr. de Kolb has found in the use of plastics is that of incompatibility of

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product with plastic. He has not yet discovered a plastic compatible with any of Coty's fragrances, for instance. As for creams, they tend to "creep" through plastic, resulting in an under-filled container.

From the merchandising point of view, there is another snag. Consumers are used to equating size with volume, according to Mr. de Kolb. Instead of reading the amount of the contents printed on a label, a customer tends to assume that the larger container holds more of a product. A plastic container usually has thinner walls than glass containers do, which makes one think there is less in it. Even making the wall of a plastic container fairly thick does not overcome the the problems. He once considered using a double-walled plastic jar to prevent the diffusion of a cream through the wall and, simultaneously, to maintain what is known as the size-capacity ratio, but the cream simply diffused through the inner wall. In time it would probably have diffused through the outer wall as well.

Such drawbacks in the use of plastics are the sort that Mr. de Kolb has come across in his design work for Coty. He proceeds in the following manner. When a design is called for, about which he may already have had something to say while wearing his merchandising hat, he begins his work on the technical side of the operation. Coty deals with a number of packaging manufacturers, since no one of them uses all the available plastics. This gives the company a far wider choice of materials to work with. On the basis of his own knowledge of the characteristics of various plastics, Mr. de Kolb will then consult with Coty's own technicians and purchasing agent, and with the manufacturer who uses the one he thinks may be best. Tests for compatibility of the product and the plastic are then run. More than one may be tried, until the best material is found.

As an example, Dow's Styron 475 was selected for Coty's new pearl-white cosmetic and lipstick combination (the Duette shown on page 451), for its high resistance to impact, and for its greater elongation than many similar plastics.

"At Morningstar, where the case was molded," says Mr. de Kolb, "we ran tests on many substances and found that Styron 475 was the only product light enough in weight for our purposes, and flexible enough not to break under strain. Also, it gave the right 'flow' in the mold and did not crack." He needed a material that was both durable and light, since it was to be carried in a woman's purse. The material chosen, a simulated white mother-of-pearl, is also in line with the current fashion in white accessories, and it has a pleasing, smooth "feel."

Testing for stability follows a choice of packaging materials. That testing is necessary, especially for plastics, is shown by the example of the plastic case for Coty's Eau de Toilette bottle. The liquid changed color in time. It was then found that ultra-violet rays

were upsetting the delicate balance of the product. A plastic that screened out the harmful rays was required.

Meanwhile, the production department is brought into the operation to deal with the questions of available machinery and production schedules. Plastic containers can be filled on conventional lines, but the filling tends to be slow because of their lighter weight. They are more likely to tip over on the conveyor, for instance, or to get out of line than do the heavier glass containers for which the conventional line was built. However, there is less breakage in plastic containers, of course, which means less time is lost in stopping the line and cleaning up the broken pieces and the product before further filling can proceed.

The purchase of new machinery specifically constructed for filling plastic containers may be considered. This, however, is likely only if the product is expected to have a large market or to be a long-term product; otherwise it would add too much to the total cost. Space for such machinery must also be taken into account, as well as the number of products expected to be in production at any given time.

Coty's caps are almost invariably plastic. As a basic material, plastic is less expensive than metal, and the tools for plastics are cheaper than those for metals.

On the other hand, the incompatibility problem may arise again here. For the Petite Mist aerosol package, a plastic had to be found that would not be harmed by the residue of spray that was bound to come into contact with the container while in use and with the cap afterwards. Aerosols, then, have their own special problems.

Although a metal cap can be formed with thinner sides, which may be desirable for the design of a specific cap, some of the plastics are sufficiently tough to be nearly as thin, and Mr. de Kolb has used these wherever necessary.

It is said that wrapping is less expensive for plastic packages, and in some instances this is so: tubes of metal dent in shipping and do not return to their original shape. Therefore, they must be wrapped, whereas plastic tubes are more elastic and need not necessarily be. However, some plastics scratch as readily, and require careful wrapping.

As a consequence of complications such as these in the use of plastics, only about half of Coty's products are packaged in plastics. Even so, Mr. de Kolb would prefer them, and he keeps looking for new possibilities. The plastics industry is very young and new plastics are constantly being put on the market. Having formerly worked with plastics manufacturers he is well aware that, in trying to develop materials with certain specific traits, scientists are likely to stumble on three or four others with interesting characteristics, and that precisely the plastic he needs most may be created tomorrow or next month. *G. M. S.* •

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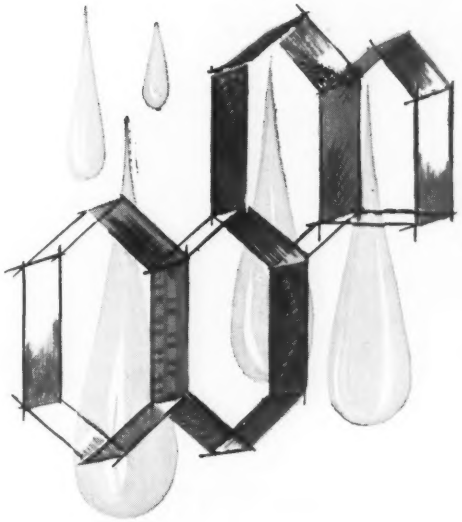

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(*Continued from page 499*)

Filling and Sealing Machine

FMC Packaging Machinery Division, 4900 Summerdale Avenue, Philadelphia 24, Pa., has developed a pouch-forming filling and sealing machine known as the Stokeswrap 1000. It is a double-tube machine with all the advantages of two single-tube units, but at less cost. The 1000 operates at speeds up to 150 packages per minute producing pouches from 2 by 3 inches up to 8 by 14½ inches (with 225 cubic inches of product).

Sealing and Coding

Arthur Colton Company, Division of Snyder Corporation, 3400 East Lafayette, Detroit 7, Mich., has developed a plastic-tube sealing and coding conversion unit that can be installed on standard Colton Model 17 or Model 175 tube fillers for paste and heavy liquids.

The unit, Model 176, fits on the Colton filling machines in place of the original folding and crimping heads for metal tubes.

Developed in cooperation with engineers of Chas. Pfizer and Company, the unit is adjustable for tube length and has optional pin-type automatic ejection features. Three tubular electric heaters heat the tube ends. An air cylinder actuates jaws to accomplish the tube sealing and coding operation after heating.

Water Softeners

Elgin Softener Corporation, 136 North Grove Avenue, Elgin, Ill., has introduced Series 500, an economy line of water softeners. Through standardization of design in models ranging from 195,000 to 1,920,000 grains capacity, these water softeners will handle almost any soft water requirement. Simplified manual operation is provided by a single lift-turn multiport valve. In addition to the clock actuated four-step regeneration cycle, all automatic models have an auxilliary push button which permits additional regenerations if required by heavy loads.

Tablet and Capsule Counting Machines

Lakson Company, Inc., Fitchburg, Mass., now has available the model 48 tablet and capsule counting machines in three sizes: 8, 16, and 26 inches. A patented rubber feed roller provides a gentle flow of uncoated tablets, gelatin capsules, and capsule shaped tablets into bottles, cans, jars, acrons, bags, and bulk drums with any count ranging from small packages up to bulk counts. A progressive discharge of filling channels avoids jamming in bottles with small necks. The machine is completely adjustable for variations in product thickness and quick-change bottle chutes are custom-designed for each bottle, with adjustability for variation in bottle size or glass tolerance.

JUNE *(Continued from page 427)*

9-17 **Achema, International Chemical Engineering Exposition and Congress,** including the annual meetings of the Dechema Society and the Isotopen-Studiengesellschaft, Frankfurt am Main, Germany (Chicago Section, A.C.S., 86 East Randolph St., Chicago 1, Ill.)

12-16 **Gordon Research Conference,** Lipide Metabolism, Kimball Union Academy, Meriden, N. H. (Dr. W. George Parks, University of Rhode Island, Kingston, R. I.)

12-29 **Rochester Institute of Technology,** annual statistical quality control intensive courses for the chemical and processing industries, staff from American Society of Quality Control, Chemical Division, (industrial statistics and quality control, 12-21; design of experiments, 22-29; applications seminar, 20-21) Rochester, N. Y. (Harold M. Kentner, Director, Extended Services, Rochester Institute of Technology, Rochester 8, N. Y.)

13 **Society of Cosmetic Chemists,** Chicago Chapter meeting, (See above).

14 **Society of Plastics Engineers,** Plastics in Packaging, Quebec Section, Montreal, Quebec, Canada

15 **Synthetic Organic Chemical Manufacturer's Assn.,** luncheon meeting, Hotel Roosevelt, N. Y. C.

15-16 **Drug and Allied Products Guild,** annual meeting, Concord, Kiamesha Lake, N. Y.

15-16 **American Chemical Society,** National Colloid Symposium, Univ. of Rochester, Rochester, N. Y. (A.C.S., 1155 Sixteenth St., N. W. Washington 6, D. C.)

18-24 **Pharmaceutical Advertising Club** advanced seminar for pharmaceutical marketing executives, Howard Graduate School of Business Administration, Cambridge, Mass. (P.A.C., 489 Fifth Ave., N. Y.)

19-21 **American Society of Pharmacognosy,** annual meeting, University of Houston, College of Pharmacy, Houston, Texas (Roll S. Westly, Eli Lilly & Co., 740 South Alabama St., Indianapolis 6, Ind.)

19-23 **Gordon Research Conference,** Cell Structure and Metabolism, Kimball Union Academy, Meriden, N. H. (See above.)

22-25 **American Therapeutic Society,** Essex House, N. Y. C.

23 **Parenteral Drug Assn.,** scientific meeting (afternoon and evening), Warwick Hotel, Philadelphia, Penna. (P.D.A. 1420 Snyder Ave., Philadelphia 45, Penna.)

25-30 **American Medical Assn.,** Exposition, New York City Coliseum, annual meeting, N. Y. C.

26-30 **Pharmaceutical Advertising Club,** meeting, N. Y. C. (See above.)

27-29 **Society for Investigative Dermatology,** N. Y. C.

JULY

3-7 **Gordon Research Conference,** Vitamins and Metabolism, Kimball Union Academy, Meriden, N. H. (See above.)

10-14 **Gordon Research Conference,** Chemistry, Physiology and Structure of Bones and Teeth, Kimball Union Academy, Meriden, N. H. (See above.)

10-21 **Philadelphia College of Pharmacy and Science,** postgraduate course in the preparation of parenteral products, under the direction of Dr. Kenneth E. Avis, Associate Professor of Pharmacy. (Registrar, Philadelphia College of Pharmacy and Science, 43rd St., Kingsessing and Woodland Avenues, Phila. 4, Pa.)

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JULY *(Cont'd)*

17-21 **Gordon Research Conference,** Microbiological Deterioration, Tilton School, Tilton, N. H. (See above.)

31 **Gordon Research Conference,** Medicinal Chemistry, through Aug. 4, Colby Junior College, New London, N. H. Steroids and Other Natural Products, New Hampton School, New Hampton, N. H. (See above.)

AUGUST

7-11 **Gordon Research Conference,** Toxicology and Safety Evaluations, Kimball Union Academy, Meriden, N. H. (See above.)

10-16 **International Congress of Biochemistry,** Moscow, U.S.S.R. (N. W. Sissakian, Leninsky prospekt 33, Moscow, B-71, U.S.S.R.)

14-18 **Canisius College Fifth Annual Infrared Spectroscopy Institute,** Buffalo, N. Y.

20-24 **American Veterinary Medical Assn.,** annual convention, Sheraton Cadillac Hotel, Detroit, Mich.

21-25 **Gordon Research Conference,** Food and Nutrition, Colby Junior College, New London, N. H. (See above.)

22-25 **International Pharmacological Meeting** (first), Stockholm, Sweden

28 **Gordon Research Conference,** Cancer, Colby Junior College, New London, N. H. (See above.)

SEPTEMBER

3-8 **American Chemical Society,** annual fall meeting, Chicago, Ill. (A.C.S., 155 Sixteenth St., N.W., Washington 6, D.C.)

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4-8 **International Congress of Pharmaceutical Sciences,** Scientific Section, Pisa, Italy (Prof. Dott. A. E. Vitolo, General Secretary, Federation Internationale Pharmaceutique, Piazza Carrara, 10, Pisa, Italy)

5-8 **National Chemical Exposition,** concurrent with the fall national meeting of the **American Chemical Society,** The Chicago Ampitheater, Chicago, Ill. (Chicago Section, A.C.S., 86 Randolph St., Chicago 1, Ill.)

11-15 **Instrument Society of America,** fall conference and exhibit, annual meeting, Los Angeles, Calif.

12 **Society of Cosmetic Chemists,** Chicago Chapter meeting, (S.C.C., 2 East 63rd St., N. Y. C. 21)

12 **Synthetic Organic Chemical Manufacturers Assn.,** luncheon meeting, Hotel Roosevelt, N. Y. C.

14 **Pharmaceutical Advertising Club,** meeting, Roosevelt Hotel, N. Y. C. (P.A.C., 489 Fifth Ave., N. Y. C. 20)

14-17 **Drug, Chemical & Allied Trades Assn.,** annual meeting, Pocono Manor Inn, Pocono Manor, Pa.

17-20 **First Annual Conference on Pharmaceutical Analysis** sponsored by the Extension Services in Pharmacy in cooperation with The School of Pharmacy, University of Wisconsin, (Richard S. Strommen, 301 Pharmacy Building, Univ. of Wis., Madison, Wis.)

20 **American Society of Perfumers,** closed meeting, Advertising Club, 35th St. and Park Ave., N. Y. C. (A.S.P., 630 Fifth Ave., N. Y. C. 20)

24-27 **Federal Wholesale Druggists Assn.,** annual meeting, The Greenbrier, White Sulphur Springs, W. Va.

SEPTEMBER (Cont'd)

26-27 **Society of Cosmetic Chemists,** seminar meeting, Barbizon Plaza Hotel (S.C.C., 2 East 63rd St., N. Y. 21)

29-30 **American College of Apothecaries,** annual convention, Jack Tar Hotel, San Francisco, Calif.

OCTOBER

1-6 **National Assn. of Retail Druggists,** annual convention, Hotel Tountainbleau, Miami Beach, Fla.

10 **Synthetic Organic Chemical Manufacturers Assn.,** luncheon meeting, Hotel Roosevelt, N. Y. C.

10 **Chicago Perfumery, Soap and Extract Assn., Inc.,** luncheon, Sheraton Towers. (Edward F. Laseh, Tenn. Products and Chemical Corp., 200 S. Michigan Ave., Chicago 4, Ill.)

10 **Society of Cosmetic Chemists Chicago Chapter** meeting, Henrici's Restaurant, Merchandise Mart, Chicago, Ill.

12 **PAC** meeting, Roosevelt Hotel, N. Y. C.

14-19 **National Wholesale Druggists' Assn.,** annual convention, Americana Hotel, Bal Harbour, Fla.

16-19 **American Dental Assn.,** annual session, Philadelphia, Pa.

18 **American Society of Perfumers,** open meeting, Advertising Club, 35th St. and Park Ave., N. Y. (See above.)

18-20 **Packaging Institute, Annual National Packaging Forum,** Biltmore Hotel, N. Y. C. (Chas. A. Feld, P.I., Inc., 342 Madison Ave., N. Y. C. 17)

31 **American Society for Microbiology,** first in series of Interscience Conference on Antimicrobial Agents and Chemotherapy. Commodore Hotel, N. Y. C.

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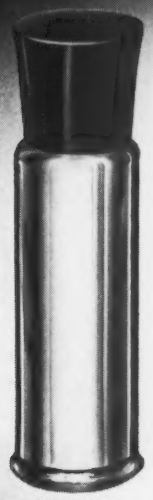

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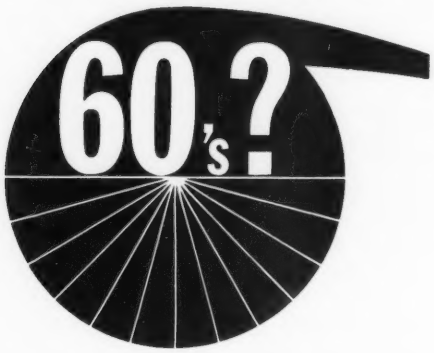

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1-3 **Parenteral Drug Assn.,** annual convention, Statler-Hilton Hotel, N. Y. C. (P.D.A. 1420 Snyder Ave., Phila. 45, Pa.)

2-3 **Society of Plastics Engineering,** Plastics in Packaging, North Texas Section, Sheraton-Dallas Hotel, Dallas, Texas

7-10 **Packaging Machinery Manufacturers Institute Show,** Cobo Hall, Detroit, Michigan. (W. L. Redding, Shea Expositions Corp., One Gateway Center, Pittsburgh 22, Pa.)

14 **Synthetic Organic Chemical Manufacturers Assn.,** luncheon meeting, Hotel Roosevelt, N. Y. C.

14 **Society of Cosmetic Chemists,** Chicago Chapter Meeting, Henrici's Restaurant, Merchandise Mart, Chicago, Ill.

15 **American Society of Perfumers,** open meeting, Advertising Club, 35th St. & Park Ave., N. Y. C. (See above.)

28 **Society of Cosmetic Chemists,** annual meeting and dinner dance, Biltmore Hotel, N. Y. C. (S.C.C., 2 East 63rd St., N. Y. 21)

29 **Toilet Goods Assn.,** Scientific Section meeting, Waldorf-Astoria Hotel, N. Y. C. (T.G.A., 1270 Ave. of the Americas, N. Y. C. 20)

DECEMBER

4-6 **Chemical Specialties Mfg. Assn.,** annual meeting, Roosevelt Hotel, N. Y. C. (C.S.M.A., 50 East 41st St., N. Y. C. 17)

7 **Synthetic Organic Chemical Manufacturers Assn.,** annual meeting and dinner, Hotel Roosevelt, N. Y. C.

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DECEMBER (Cont'd)

12 Chicago Perfumery, Soap and Extract Assn., Inc., annual business meeting and luncheon, Sheraton Towers. (See above.)

14 PAC meeting, Roosevelt Hotel, N. Y. C.

16 Chicago Perfumery, Soap and Extract Assn., Inc., Christmas Ball, Conrad Hilton Hotel. (See above.)

MARCH 1962

20-29 American Chemical Society, annual spring meeting, Washington, D.C. (A.S.C., 1155 Sixteenth St. N.W., Washington 6, D.C.

MAY 1962

9 Toilet Goods Assn., Scientific Section meeting, Waldorf-Astoria Hotel, N. Y. C. (T.G.A., 1270 Avenue of the Americas, N. Y. C. 20)

COSMETIC SAFETY

(Continued from page 441)

duce an eczematous response in guinea pigs exposed to 4 per cent nickel sulfate. There was no allergic response to the separate materials under the test conditions used, but there was to the joint application. It seems probable that the lauryl sulfate did not act merely as a wetting agent on the skin surface, but that it actually affected the depth and the nature of penetration of the nickel.

Vinson and Choman have extended their studies to a number of other surface active agents including examples of anionic, nonionic, and cationic materials. They found significant differences among these detergents in eliciting the eczematogenic responses to nickel. The skin responses correlated very well with the depth of penetration of the nickel. The tests and conditions were so stringent that it is difficult to say what the practical applications of the study might be. They do, however, furnish light on the way in which the surface active materials affected the penetration of a second material.

The whole question of the effect of the one agent on the penetration of skin by a second agent is very important in our consideration of safe cosmetic formulations. It is obvious that some cosmetics, to achieve the desired effect, must penetrate into the dermal layer of the skin, and thus these products should be so formulated as to facilitate such penetrations. Other cosmetics are intended only to have a surface effect on the skin, and it may be desirable to formulate these materials in a way which reduces penetration. Only when we know how to control penetration at will can these things be done.

Although basic physical-chemical investigations of the type I have here discussed are important in dissecting the over-all problem into pieces small enough to study effectively, it is also obvious that what goes on under the dynamic conditions of the living skin needs further study.

We need to study the effect of topical agents on the enzyme chemistry of the skin. The skin contains most of the enzymes that have been associated with the major metabolic processes in other tissues. The

studies of Bernstein and Sweet[6] and those of other workers have demonstrated in skin the presence of nearly all the enzymes involved in glycolysis. Similarly, other studies have revealed the presence of all the major citric acid cycle enzymes in skin. These findings indicate a basic similarity between the fundamental biochemical processes of the skin and those of other tissues.

However, certain groups of enzymes, not directly involved in the basic metabolic processes of glycolysis and respiration, have been studied in relation to various experimental and clinical disorders of the skin. These enzymes, because of their clinical implications, may be especially pertinent in evaluating the toxicity of potential cosmetic agents. For example, the amino acid decarboxylases appear to play an important role in the mechanism of skin irritations. The compound 48/80, a potent histamine releasing substance, has been reported to increase the activity of histidine decarboxylase in rat skin.[7]

Since the action of decarboxylase enzymes on amino acids leads to the formation of mono- and diamines, many of which are potent vesicants, the role of amine oxidases in destroying these amines has considerable clinical significance.[8] Thus diamine oxidase has been found in the cutaneous blister fluid produced by chemical and thermal burns, but not in the fluid of blisters resulting from natural disease states.[9]

By determining the effect of potential cosmetic substances on the activity of the above and other skin enzymes that may prove to be clinically significant, it should be possible eventually to estimate the absolute skin irritation potential of a compound.

Another interesting approach to the study of the problem of sensitization has been reported by Osbourn, Tusing, Coombs and Morrish.[10] The study was in a sense a combination of valuable research and new product development. As we know, it is difficult to predict with any given material whether or not it will cause a response in any given person. There are marked differences among people in their sensitivity to allergens. Some people, for example, are allergic to a whole host of materials, and others seem to be completely resistant. Thus, a study of a given proposed new product must be carried out on many subjects before any idea can be obtained about its possible frequency of eliciting responses.

The problem probed by these investigators is one of determining the relative frequency of response to a series of products, as opposed to predicting absolute frequency expected from each of them. If several materials are tested simultaneously on the same subjects, and if compound A always elicits a stronger reaction than B in sensitive persons, then one can say with considerable confidence that B is safer than A. The authors mentioned have used a multiple-patch technique in order to rank a number of materials with respect to their sensitizing potential. By using this method on large numbers of people of varying

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skin colors and types and various hair colors and textures, they were able to group a number of perfume ingredients in roughly their order of sensitizing potential. In this, they have greatly contributed to improving the perfuming of hypoallergenic products.

This discussion of skin penetration, of sensitization, and the enzyme chemistry of skin should give you some idea of industry's interest in research directed to greater cosmetic safety and utility. We want to understand better the basic physical chemistry and biochemistry of skin. We want to use this information to develop better cosmetic products. In doing so it will be necessary to develop better testing procedures with experimental animals—ones that will correlate well with human experience.

The standard test animal for study in this field is the guinea pig, and many materials that will elicit an allergenic response in guinea pigs have also been shown to do so in humans. However, the correlation between guinea pig studies and human experience is not perfect, as is illustrated by the fact that Lewisite, shown to be a sensitizer on humans, does not elicit an allergenic response in guinea pigs.[11] It is not surprising that this correlation between the two species is inexact, since the response in the two cases is different. In the case of the human reaction to the sensitizer, erythema, edema, and vesiculation are all noted, but in the guinea pig the only response is erythema.

A possibly important advance in improving this correlation was made by Baer, Rosenthal, and Sims.[12] These investigators used an acanthotic agent to induce a thickening of the guinea pig skin before applying the test material. When this was done the response of the guinea pig to the sensitizing agent was quite similar to the response in humans. This is a step in the right direction, but there is another problem.

Even if further progress can be made in finding a test animal or test conditions that will improve the correlation between animal testing and human experience, it would be impossible to overcome the statistical problem. Industry is obviously interested in marketing products with as low as possible a potential for causing an allergenic response in humans.

It has been proposed that there should be no more than one person in ten thousand who will react to a particular material. Even this frequency is high, when you consider that many cosmetic products are used by millions of people. Schwartz demonstrates the problem we face with a tabulation reproduced in "Cosmetics, Science and Technology,"[13] prepared by Henderson and Riley of the United States Army Industrial Laboratories. According to their calculations, it would be necessary to have no positive reactions *at all* in 30,000 subjects before the maximum possibility of an allergic response could be reduced to the order of one in ten thousand. Of course, it is impractical in the early stages of new product development to work with panels of thousands of vol-

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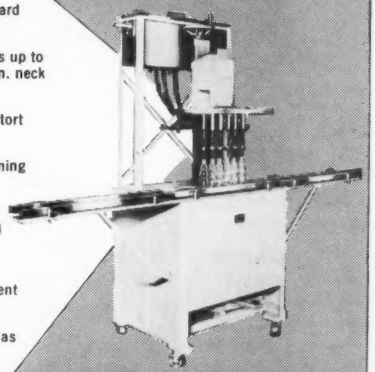

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unteers, and something else must be done.

Using guinea pigs in the routine screening of any new materials should eliminate from consideration any strong sensitizers. However, in the case of Lewisite, which I mentioned before, such studies would not have predicted reaction in humans. There are to my knowledge no instances of materials that do elicit responses in guinea pigs but are not allergenic to at least a small percentage of humans. Thus anything that has given positive response in the guinea pig test should be eliminated from further consideration.

When the final product is prepared, the best procedure found by anyone is to carry out panel testing under normal conditions of use with careful supervision by about 100 to 500 subjects. If there are no adverse reactions in such a panel, test marketing can be commenced on a limited scale with a careful follow-up of consumer complaints. If the results are favorable, the test market can then be expanded. With satisfactory results in the expanded market, it is then safe to go ahead with national distribution.

With respect to responsibility for cosmetic safety, industry's position is quite clear. We have a responsibility to our customers to provide effective products, and to use every precaution to see to it that these products are safe according to directions for their use, before distributing them widely. We also have a responsibility under the Food, Drug, and Cosmetic Act to meet all the requirements of the Act.

In doing this, responsible industries have always found the Food and Drug Administration officials very understanding of their problems. Since many of the testing procedures are not exact mathematical sciences, it is often desirable to discuss methodology with FDA officials. We have always found these meetings helpful. This suggests another area of industry responsibility for cosmetic safety. We should continue this close cooperation between scientists in industry and government to develop increasingly reliable testing procedures. I am sure from our contacts with FDA that they are receptive to this, and I believe that other responsible industry representatives agree with me that we are ready to contribute our efforts to such a program.

This is a sound and a good policy, but there may be a very real problem in doing this. Let me quote from a very interesting report in the November 25, 1960 issue of *Science:*

"The second committee, investigating personnel (of the FDA) has yet to file its report, but it has leaked enough of its feelings to foreshadow its findings. These are that, although there are no more such blatant conflict of interest situations in FDA as Welch represented, the relations between FDA and the drug industry are indeed much too cordial. The committee would like to see a return to the arm's length stance of FDA that prevailed from the time of the New Deal

through until about the end of World War II. Unlike the recommendations of the National Academy Committee, this does not find much sympathy in FDA, where the official view is that FDA can now accomplish a good deal that is useful by enlisting the cooperation of industry, something which would be difficult to do if the position of FDA were changed from regulator to policeman."

We in industry believe that much is to be gained by future cooperation between scientists in industry and scientists in government. We encourage cooperation because in this area the interests of industry and of the Government are identical—the development of evaluation procedures which will insure that industry's products are safe for the consumer.

The article in *Science* goes on to state:

"Any major policy changes at FDA will have to be confirmed by the new administration, but everyone assumes that the FDA under the Kennedy administration will go at least as far in asking for legislative reforms as the FDA did at its testimony before the Kefauver committee last June. It is assumed that the new HEW secretary will reaffirm Flemming's endorsement of the proposals of the National Academy Committee. Whether the new secretary will move to carry out the recommendations of the personnel investigating committee over the objections of career officers at FDA is less clear."

We hope that the new secretary will clarify his position on these issues as soon as possible, for the benefit of the officials in the regulatory agencies, as well as for us in industry.

In conclusion, we see an increasing industry recognition of the contributions of the many scientists who are supplying fundamental knowledge on the penetrability and absorbability of the skin. The increasing number of dermatologists and other medical consultants who have been called to aid in the development and testing of new products is further evidence of the mature interest and responsibility for safe products felt by organizations in the cosmetic industry. The facts demonstrate the active interest and responsibility felt by industry for cosmetic safety.

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